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Original Communications

THE CORRECTION OF FACIAL DEFECTS WITH SPECIAL REFERENCE TO NUTRITION OF THE SKIN FLAPS AND PLANNING OF THE REPAIR.*

By C. C. COLEMAN, M. D., F. A. C. S., Richmond, Virginia.

Transplantation of pedicled skin flaps is often required to make good the tissue loss of acquired facial deformities. Some impairment of the blood supply of the transplanted skin flap is inevitable but, unless the interference with the circulation of the tissue fluids through the pedicle can be kept within reasonable limits, the transplant may die from gangrene.

The loss of a skin flap is a serious matter, followed as it generally is by infection, loss of time, increase of deformity and sometimes by the exhaustion of all of the tissue available for repair. The cosmetic results of transplantation of skin where the flap has barely survived after a desperate struggle for nutrition are generaly impaired by fibrosis and changes in pigment. These effects of severe local anemia permanently alter the appearance of the flap and detract from the success of the operation. It is of the utmost importance, therefore, that the nutrition of the flap during the early period of attachment to its new bed be kept at the highest possible level, both to lessen the dangers of gangrene and to preserve the normal appearance of the transplanted skin.

CASE I. (A)—Deformity from old burn of right side of face. The right eyebrow is destroyed and there is an ectropion of both lids, with annoying irritation of the eye from constant exposure. The right side of the upper lip is everted and pulled upward by a dense scar of the cheek. A linear scar external to the outer canthus prevents a worse ectropion of the lids. (B) A flap was raised from the neck and tubed. At the same operation the lip was released by excising the contracted scar and this defect closed by advancing a small flap. The transplantation of the pedicled flap from the neck into the defect made by excision of the larger scar of the cheek is shown. The flap was shifted to the cheek two weeks after tubing. (C) Final—one year later. Note upper lip and blending of cheek flap with surrounding skin. The eyebrows are symmetrical and there is no ectropion of either lid.

*Read at the meeting of the Medical Society of Virginia in Lynchburg, October 18-21, 1921.

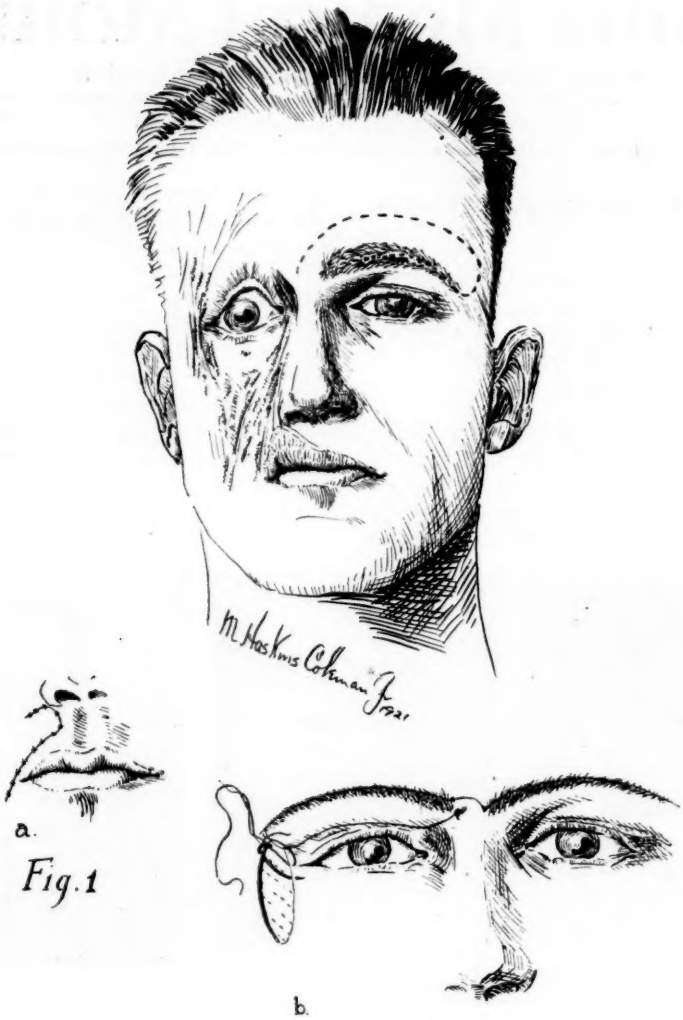

Fig. 1

FIGURE 1, CASE 1—Diagram of Repair.

The larger figure shows the restoration of right eyebrow by division of the wide left brow and shifting a pedicled flap with half of left brow into an incision on the right. By including a wide margin of skin above the upper brow line, it was possible to correct the ectropion of the upper lid which was due to the pull of the supraorbital scar and not to scarring of the lid. The flap of eyebrow was raised and returned to its bed. Transfer of the flap to the opposite side was made eight days later.

(a) Method of advancing mandibular flap to correct deformity of upper lip. The direction of this flap opposes a return of the lip deformity.

(b) Flap with narrow eyebrow in position on level with opposite brow. The width of the flap is sufficient to correct the ectropion of upper lid. Kink of pedicle excised two weeks later. Nutrition of flap excellent. No hair lost. The brow should not be shaved for this operation.

Note excision and oblique suture of line in scar of upper malar region. Method of suture prevents tendency to recurrence of ectropion of either lid.

Practically nothing can be added to the ancient patterns of skin flaps found in the text books of operative surgery. The great difficulty lies in determining before transfer, the viability of a flap fashioned by an illustrated text book design, and this is a phase of the subject calling for considerable experience and judgment.

Adequate study of the defect and careful planning of the repair are probably next in

CASE 2. (A)—Dense scar of neck, right side of chest and arm, from burn received in infancy. Secondary deformities consisted of underdevelopment of right thorax, and deformity of the mandible from traction of scar. The folds of the scar had chronic ulceration and malignancy was feared. The traction of the scar was communicated to the auricle and eyelid.

(B) Outline of flap over right scapula. The circulation was surprisingly good. Pedicle immediately tubed and flap transplanted into large defect resulting from excision of scar of neck. Satisfactory closure of bed of flap made (c) but some separation of skin took place about one week later. Pedicle divided sixteen days later. It contained an artery nearly as large as the external maxillary. The nutrition of the flap gave no concern at any time. Healing was exceptionally good.

(C) Healed scar of bed of flap.

(D. and E.) Final.—Five months after division of pedicle.

Note upper margin of flap and correction of deformity of face caused by traction of scar of neck. The ear and eye have normal appearance. The asymmetry of the lower face (D) is due to dipping of the mandible on the right side. No attempt was made to correct the bony deformity.

importance to a thorough understanding of the problems of local nutrition in plastic surgery of the face. Many errors may be traced directly to the failure to make proper examinations of the deformity. No amount of mechanical skill admittedly so essential in this work can compensate for a vague, uncertain plan of repair or offset a groping visualization of what the final result should be.

The term *diagnosis* takes on a special significance, when used in plastic surgery, and includes not only a general recognition of the type of defect but it also means an estimation of the kind and amount of tissue lost in the original injury and the displacement of the structures about the deformity caused by the healing processes. The study of the defect before operation is greatly aided by photographs and plaster models in suitable cases. If is often necessary to perform a number of operations for the relief of a single defect. It may happen that when the series of operations is well advanced the surgeon's mental image of the original deformity has become very hazy unless assisted by photographic records and plaster casts. A re-study of the plaster cast at such a stage may be of the greatest help not only in planning the future steps of the repair but also in providing a basis upon which the final results may be better visualized. In rhinoplasties, for example, where there is deformity from loss of bone and soft tissues, a model of the defect should be made as a part of the preliminary study, and upon this model may be constructed the type of nose which the surgeon can use as a guide in the various stages of the reconstruction.

CASE 3. (A)—Photograph four months after gunshot wound which destroyed part of mandible, lower lip, upper lip and tongue, with extensive mutilation of the soft tissues overlying the left mandible. A severe infection resulted. This was controlled by Dakinizing the wound.
A long flap was raised from the neck and upper chest and tubed, under local anesthesia, in three stages. The lower end was detached on the twenty-fourth day and folded back on itself to make a lining, instead of cutting a second flap as is usually done.
(B) The folded flap has been shifted into the defect after excising all of the scar. The pedicle was later divided and the proximal part returned to the neck.
(C) Photograph three months after last operation. The border of the lip shows practically no defect where the flap of mucous membrane of the cheek meets the undamaged lip on the right side. This transplant of mucous membrane was fitted into a shallow depression made by excising a strip of the upper border of the folded neck flap. The patient refused treatment for defect of upperlip.

The technique of transplantation of skin flaps has recently received two important accessions through the work of Gillies and Blair, who have emphasized "tubing" and "delayed transplantation" of the flap. Tubing the pedicle of the flap while leaving both ends attached for from one to several weeks is a valuable procedure when it is necessary to shift

whole thickness of skin for a considerable distance. This method is intended primarily to protect nutrition by closing up the raw surfaces of the flap. It has possibilities for harm if a too narrow pedicle is tubed, thereby compressing the vessels and choking the flap with venous blood. In a recent case, untubing on the second day promptly averted the loss of the flap. A living flap will eventually

FIGURE 2.—Method of Tubing Flap and Suturing Bed. Note outline of a strip of mucous membrane from the cheek to cover the upper border of the folded flap and reconstruct the lip.

tube itself if its raw surface remains exposed. Artificial tubing of the flap probably resulted from observation of this natural protective process.

Raising a flap from its bed and tubing prepares it for the more severe test of viability which it undergoes when detached at one end and shifted to the defect. Its capacity for survival during the process of transplantation is increased by limiting its nutrition to the pedicle alone for a period before the transfer is made. The gradual reduction of the blood supply of the flap, if carefully done, may be carried to an indefinite extent so that the circulation sufficient for the life of the flap may eventually take on characteristics similar to those existing in plant life.

Delayed transplantation after raising the flap and returning it to its bed is another useful method for testing out and promoting viability before the scar tissue of the deformity is excised and covered by the flap. The advantages of this method have been strikingly demonstrated by Blair. The selection of a flap in suitable cases with a fair sized artery in the pedicle (J. S. Horsley) obviates the necessity of delayed transplantation.

In preparing the deformity, scar tissue should be completely removed whenever this is practicable. Scar tissue disturbed by partial excision is likely to show further contraction. If the complete excision of the scar is not feasible, the mobilization of the residual scar should be so accomplished as to provide for later contraction. The size of the flap should correspond closely with that of the defect, in order that the tension in the flap should be equal to that of normal skin. An exact fit of the flap when returned to its original bed, as in delayed transplantation, is no doubt one of the reasons why it is more likely to survive than if transferred to a defect from one-sixth to one-third smaller than the flap. The contractility of a pedicled skin transplant, if unresisted, impedes the enfeebled circulation. This should be offset by restoring the normal skin tension with an accurate fit to the defect.

The after-care of plastic cases is of equal importance with the surgical procedure. The details of this after-care are largely concerned with the problems of the nutrition of the flap which may be threatened by fluid accumulations, infections and tension or torsion of the pedicle. It may be necessary during the first forty-eight hours to return the flap to its former bed, especially if the pedicle is constricted

by twisting or is pressed upon in its new position. Careful planning of the work before operation and a strict observance of the principles of nutrition will render unnecessary, in most cases, the nursing of sick flaps after the transplantation is done.

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SOME REMARKS ABOUT CATARACT.*

By JOS A. WHITE, M. D., Richmond, Va.

I must offer an apology for addressing you on such a well worn subject as cataract, with which I have no doubt you are as familiar as I am, but I thought it would not be amiss, as, just now, it is a question of more than usual interest to the ophthalmological world, because of the prominence given it by the discussion of the removal of the lens in its capsule, the so-called intracapsular operation.

This is not an entirely new operation as it dates back to Daviel, to whom we are indebted for the generally accepted cataract operation of today, modified from his flap extraction done in 1745, as he also attempted the intracapsular method in 1748 unsuccessfully. Before him, however, St. Yves and Pettit had removed dislocated lenses in 1707 and 1708 in the capsule, Richter did the operation in 1773 and Beer in 1799, but it fell into disuse until about 1864 or 1865 when it was revived by Sperino, Pagenstecher and Wecker. Macnamara in Calcutta also followed this method about the same time, according to his book published in 1870. Sperino removed the lens by pressure and Pagenstecher removed it with a spoon. He was doing this when I was a student in Germany. The reasons, therefore, set forth by these revivalists, were substantially the same as those of today, viz., that if the lens is removed *in toto*, capsule and all, successfully, we have the ideal eye, a clean black pupil, little or no risk of uveal complications, and no possibility of after-cataract to mar the perfect result. Theoretically, this is eminently correct.

The operation, however, did not make much progress among ophthalmologists of Europe or America, and it remained for India to bring it to universal attention, although S. J. W. Wright, of Columbus, Ohio, published a paper on this method in 1884. Col. Mulroney, of Armitsar, did most of his operations by an intracapsular method, peculiarly his own, and his success drew the attention of Col. Smith, of Jullunder, who took it up in 1895, and has since done over 50,000 extractions. Out of his enormous experience he has modified and changed his original methods, until he worked out his present technic, in which the lens in its capsule is removed by pressure on the globe, made to turn a somersault and come out feet foremost. Other ways of removing the lens in its capsule are, by the spoon, the spoon and pressure combined, with forceps, with forceps and pressure combined, and with the vacuum cup.

Today the spoon is only used as an adjunct to pressure, when pressure fails to deliver the lens, or it becomes dislocated.

Extraction with the forceps was an accident that happened to many, myself among them, who some years ago attempted the removal of the anterior capsule with capsule forceps, instead of opening the capsule with the cystotome in cases with a firm capsule and a weak zonula, the whole lens being lifted out of the eye when the forceps grasped the capsule.

This, which might be called the traction method, has been practiced by Dr. Arnold Knapp, Dr. Torok, Dr. Verhoeff, and others, for some years, using however, the Kalt forceps without teeth, or Dr. Verhoeff's modification of the Kalt forceps. The lens is dislocated by the forceps applied to the lower part of the capsule, and then delivered by pressure, feet foremost as in the Smith Indian operation. Dr. Knapp claims that there is less traumatism, less pressure required than in the Smith Indian operation, and less danger of loss of vitreous. Torok's operation differs from Knapp's in as much as the lens is delivered with the forceps grasping the capsule whilst pressure is applied and the lens is not tumbled.

Dr. Allen Greenwood last summer, in Boston, reported twenty-five cases operated on with the Verhoeff forceps in which he removed the lens without tumbling, and without pressure, simply by traction, which very

*Read at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology at Roanoke, April 13, 1922.

much simplifies the operation in cases suitable for it.

The vacuum operation was proposed by Vard Hulen, of Berkley, Cal., in 1910, but Barraquer of Barcelona is the leading apostle of this method, since his first publication in 1917. His latest report of a thousand cases with remarkable success has made Barcelona another Mecca for the ophthalmolgists, as Jullunder has been for some years.

Were I not almost too old a dog to be taught new tricks I would be one of the pilgrims to these shrines, although I have seen the Smith Indian operation done a number of times in this country, both by Col. Smith and some of his disciples, and expect to see Professor Barraquar demonstrate his method in Richmond very shortly.

That I have had an experience of over fifteen hundred cataract operations in my professional career is no reason why I should be wedded to my own method if I can be convinced of a better one as easy of accomplishment with less risk of failure, less traumatism, a lower percentage of accidents and complications, and a greater chance of restoring useful vision to my patients.

Removal of the lens in its capsule is undoubtedly the operation that promises the ideal result, when successful, and any operative technic that reduces the risks of accident in the delivery of the lens to the same level as in the capsulotomy operation, I will gladly adopt, as it does away with the question of after-cataract entirely,—its main merit.

The intracapsular operation, by whatever method, has not the same wide field of application that belongs to the combined extraction, which is suitable to all kinds of cataract at any age over twenty-five or thirty, and sometimes to younger cases, as it is practically limited to persons over sixty years of age, although Col. Smith does it on any kind of cataract and at any age.

It is, however, especially valuable in immature cases over 40 years of age, for which the capsulotomy operation is not desirable. Because of the uncertainty about delivering all of the cortical matter, as we cannot always see it, delivery of these cataracts in the capsule does away with any anxiety on this score, and the attendant risks of complications when the toilet is not complete. Irrigation, however, does much to lessen these risks.

There is no question that the intracapsular operation is the operation of choice, provided the operator has had sufficient experience and has become sufficiently skillful to offer the patient the same chances of success as in the combined operation. The Smith Indian operation requires great dexterity on the part of the operator and great experience on the part of the assistant, so much so that a number of very skillful ophthalmologists who were very favorably disposed to it gave it up, after a few trials, as unsatisfactory in comparison with other methods. The frequent loss of vitreous, even in the hands of the most expert exponents of the operation, does not recommend it for general use. For example, Col. Smith did fifteen extractions at the Illinois Eye and Ear Infirmary, ten at the Chicago Eye and Ear Infirmary, eighteen at the Willis Ophthalmic Hospital in Philadelphia, with vitreous loss six per cent. in the first fifteen, eighteen per cent. in the next sixteen, and thirty-eight per cent. in the eighteen in Philadelphia (over twenty per cent. in forty-nine operations).

Loss of vitreous is not to be regarded lightly; whilst most of the cases with this accident recover fair vision, very few escape some changes in the vitreous that may give trouble.

In many of the Smith Indian operations that I saw done, vitreous was lost and, in speaking to Col. Smith about it, he made light of it. No other ophthalmologist has ever had his remarkable experience with the staggering total of over 50,000 operations, and none have his extraordinary dexterity, and can afford to look at this accident from the same viewpoint. The operation has come to stay, but it will be a long time before it becomes general in this country.

The vacuum operation of Professor Barraquer, I have never seen and therefore cannot criticise it, but his reports are exceedingly favorable, and it subjects the eye to less traumatism. Only seven cases of vitreous loss in one thousand operations is a remarkable record. A seemingly complicated apparatus is necessary for the operation, and may be more

or less of a drawback, for those accustomed to other methods.

The traction operation done by Drs. Knapp, Torok, Verhoeff and others, in which the blunt capsule forceps and pressure both are used, is a modification of the Smith Indian operation in as much as the lens is practically dislocated before pressure is applied, without as much danger of vitreous prolapse.

The same traction operation without pressure as suggested by Dr. Allen Greenwood appeals to me in suitable cases over sixty, immature, mature, or hypermature, and if the small number he reported is any criterion, it is the safest intracapsular operation.

In the intracapsular operation, the important factors for success, besides asepsis, seem to be the control of the lids, and any means of enfeebling or partially paralyzing the orbicularis would be a great desideratum. Col. Smith gives his patients 120 grains of bromide of soda for men and 100 for women from eight to ten hours prior to the operation. He says that this keeps them quiet during the operation and that they sleep well for two or three nights after. Dr. Wurdemann says, as we cannot paralyze the orbicularis, we may paralyze the patient with a one-quarter grain of morphia and a one one-hundredth of a grain of hyoscine given hypodermically. I believe a smaller dose of both would go far in quieting the patient without making him or her too stupid to respond to suggestions during the operation or causing nausea. Dr. Barraquer injects one-half of one per cent. solution of novocain in the tissues outside and below the eye, to block the branches of the facial. Col. Smith thinks that this is of no value. Neither use a speculum, the lids being controlled by an elevator, hook, or the fingers of a trained assistant. Dr. W. A. Fisher, of Chicago, one of Col. Smith's pupils, has devised a special form of lid elevator with a double hook. In the traction method a speculum is used as in the combined operation. It will prevent pressure from the orbicularis if it is kept well up and away from the eye, but holding up the lid is better. Any one who discovers a method of blocking or paralyzing the facial temporarily, for two or three days, will confer a greeat boon on cataract cases.

The preparation of the patient differs little from what we are accustomed to:—a thorough examination as to the physical condition, elimination of all chances of infection, from within and without, seeing that the conjunctiva and lachrymal sac harbor no bacteria, that oral sepsis is eliminated, that the blood pressure is not too high and that the tension of the eye is normal, all some days in advance, and a thorough purgation the night before the operation. In one respect both Col. Smith and Dr. Barraquer do practically what I recommended at the A. M. A. meeting in 1904, differing slightly, that is the use of bichloride, Col. Smith using a one to three thousand solution. The conjunctival sac is flushed out with this solution followed by normal saline. I suggested thorough irrigation and flushing of the sac with a one to ten thousand bichloride solution, after cleansing the lids and orbital area, as for any other surgical operation, then filling the sac with a salve of bichloride, one to three thousand, twelve to eighteen hours before operating, and closing the eye with a bandage, and, just before operating or using the local anaesthetic, flushing with the one to ten thousand solution, thus keeping the antiseptic in contact with the conjunctiva for hours instead of merely washing with it. If, when the eye is opened, any secretion is found, the operation is deferred. If clean, and the operation is done, the eye is again filled with the antiseptic salve. Whilst the solution, one to three thousand, causes considerable irritation, the salve does not, but I do not know why, still the fact remains.

Salves of atropine, eserine, etc., are frequently used in eye troubles and that the contained drug is absorbed is demonstrated by its effect upon the pupil. Is there anything, therefore, to prevent the bichloride from being absorbed into the ocular tissues the same way, and help in sterilizing them? If this is rational, the bichloride salve should be a better means of sterilizing the eye than merely flushing it with the solution, as it is kept in contact with it for several hours. Dr. Barraquer uses the bichloride salve as an eye dressing after the operation. This local preparation is to eliminate postoperative infection, which is rare now-a-days but makes its appearance occasionally in spite of every precaution, because of some avenue of infection being overlooked, or because of some defect in technique.

Dr. Bell, at the New York Eye Infirmary,

in about one hundred and sixty-five cases of extraction, has tried dropping a one per cent. solution of silver nitrate in the eye a short while before operating, which sets up considerable inflammation of the eye, and this he claims is its only objection, as it does not interfere with the operation, and is seemingly a practical specific against infection, having had none in this series. Dr. Lambert has tried it in seventy-five cases with the same result. Personally, I know nothing of this method as I have never tried it. Whether it is as valuable as is stated remains to be seen, statistics being sometimes misleading. I have operated on three hundred and twenty-one successive cases by my own method without an infection, and then had two cases of infection in the next hundred, in spite of every precaution.

Dr. Verhoeff uses a four per cent. solution of protargol to prevent infection, dropped into the eye before operation. Some have recently tried two per cent. solution of mercurochrome in the same way.

Locally, the eye is anaesthetized by most operators, with a four per cent. cocaine solution. Barraquer uses a combination of cocaine, and euphthalmine, five per cent. in "vaseline," at intervals, for one hour and a half to induce deep anaesthesia. Recently the new local anaesthetic, butyn, has been successfully substituted for cocaine, a two per cent. solution dropped into the eye at short intervals for five or six times to produce deep anaesthesia. It has the advantage over cocaine in that it does not strip the cornea and does not dilate the pupil, nor is it as toxic as cocaine, but it produces considerable congestion of the eye and it is better to use adrenalin either in combination or along with it.

The use of atropine or eserine before, or when the operation is done, seems to depend on the experience of the operator, and whether a simple or combined operation is to be done. I think that an iridectomy is usually done now-a-days because of the risk of iris prolapse in the simple extraction. For a long time now, I invariably do an iridectomy as a preliminary in slowly maturing cataract, and in all other cases, if the patient consents; otherwise at the time that the operation is done.

I make a good sized corneal incision, but not 180 degrees as is done by Col. Smith for the intracapsular operation, with a conjunctival flap, and try to make a free capsule opening in the antero-superior periphery as advocated by Dr. Herman Knapp. Several incisions in the capsule are objectionable as pieces of the capsule may remain in the eye and cause iritis. Removal of the anterior capsule with the toothed forceps which I did a number of times, I have given up, as I never could tell how much of the capsule I had removed. Some operators use the blunt forceps for removal of the anterior capsule, with which I have had no experience. Some operators use a corneal suture, de Lapersome, Dujardin, Ellett and others. With this I have had no experience as I have always thought it an addition to the technique that complicated instead of simplifying the operation, even if it did all that was claimed for it by its advocates, and had no advantages over a conjunctival suture which is applied by Verhoeff, Greenwood, Barraquer, etc.

A clean toilet of the operated eye in as perfect removal of cortical debris as possible is all important in the extracapsular operation to prevent secondary iritis and after cataract, but it is sometimes unwise to keep up the pressure or stroking too long, as it may cause striped keratitis, although this also follows the intracapsular operation. Irrigation of the anterior chamber is practiced by some operators, and others think that this is unnecessary, but it is valuable in immature cataract. Iritis and irido-cyclitis and after-cataract, according to Col. Smith, are due to capsule remnants left in the eye, whilst many think they are caused by cortical remains. Be this as it may, both iritis and irido-cyclitis occur at times after the intracapsular operation, as the reports show, and whilst after-cataract rarely does, frequent loss of vitreous brings about later troubles that reduce visual acuity.

When the operation is completed I put a drop of one per cent. atropine in the eye and flush it with a weak solution of bicloride, fill the eye with bichloride salve 1:3,000, put a light bandage on each eye, held by adhesive and a mask over all. I advise perfect rest and quiet in bed, and, if the eye gives no trouble, I leave the bandage alone for two or three days. I then change it, examining merely the appearances of the lids unless some symptoms arise that require inspection of the eye.

Patients that complain of their backs are propped up in bed or allowed to lie on the side.

Usually the unoperated eye is released on the third or fourth day, and the operated eye in a week or ten days, cases varying in this respect as confinement acts differently upon different temperaments. Col. Smith bandages the eye and does not look at it for a week or more. This may be well enough at his clinic in India, but I would be afraid to follow him as it might be fatal to many eyes, in the extracapsular operation, that could be saved by early inspection and the correction of resulting complications.

Questions that arise in considering cataract, such as, when should we operate? how long is the waiting stage? what are the chances of good sight? can commencing cataract be arrested? are of serious moment to the patients and hard to answer satisfactorily. When we should operate depends on the case. If both eyes are in about the same condition or if there is only a slight difference in vision, and vision is appreciably lessened, I always do a preliminary iridectomy on the worst eye, and in my experience the cataract in that eye will mature much more rapidly and can be removed before the other eye becomes blind. If one eye is only slightly involved, I let the case wait until the first eye is ready for operation. When both eyes are so bad that useful vision is abolished and the cataracts not matured, I do not hesitate to remove the worse of the immature cataracts, provided the case is dependent upon sight for support.

How long is the waiting stage? No one knows. Sometimes a cataract advances so far and stops for months; again one that has been dragging on for months will suddenly take a new turn and mature rapidly.

What are the chances of good sight? Who can tell? When a cataract has advanced far enough to shut off a view of the inside of the eye and eye ground, how can we predict the outcome of an operation? Good light projection, seeing shadows of fingers against the light of a window, etc., does not mean that there is no choroidal, retinal or optic nerve trouble in an early stage that may get worse or has already gotten into a stage that would prevent satisfactory vision. I have had this experience more than once, and the disappointment of a poor result from a good operation.

Can cataract be arrested? Possibly, not probably. Some years ago the electric current was vaunted as an arrester of lens changes. It proved fallacious. Now it is suggested to try the subconjunctival injection of cyanide of mercury, one to six thousand, in people over forty, whose sight has fallen to 20-30 or less with faint changes in the lens, and the use of dionin locally. As yet nothing encouraging has come of it. I have seen opacities in the lens disappear spontaneously, but I had no explanation for it. Experiments are being conducted to provide a sérum for arresting lenticular opacities, but have not progressed far enough to be hopeful.

What conclusions might be drawn from this brief review of the present cataract question? As far as my experience goes, I would say that, like many other surgical problems, it is best for each one to follow the method or technique that has given him the best results. Although the intracapsular extraction by one or other of the methods suggested would theoretically be the operation of choice, it has not yet, been sufficiently perfected to become a routine operation and displace the commonly accepted extracapsular operation.

In fact, for some forms of cataract, especially in people under forty-five, it will be long before this latter method is relegated to the scrap-heap, notwithstanding the probability of after-cataract developing in a large number of cases, thus necessitating another operation.

Before closing, I would call your attention to the habit of many ophthalmologists in dispensing with the gown, the cap, and the mouth shield, when operating for cataract, and thereby becoming a joke to the general surgeon. We thoroughly sterilize the instruments, and, as far as possible, the field of operation, we scrub our hands, and touch nothing that comes in contact with the eye, but it is also the part of wisdom to follow the rules of strict surgical asepsis to protect the patient from the danger of infection from clothes, expired breath, etc., as the surgeon does. I know of one famous operator who does extractions sometimes with a cigar in his mouth, but I should be rather afraid to follow his example.

200 *East Franklin Street.*

REMARKS ON RAILWAY INDUSTRIAL SURGERY.*

By E. L. KENDIG, M. D., Victoria, Va.

These remarks will be confined to a discussion of a few points in the surgery of railway injuries. They are applicable, however, in a greater part, to other injuries, industrial and otherwise. This paper is based on the nature and result of 1,206 cases of injury sustained in railway service, as shown by my records. I personally attended each case at the time of injury. Some of them were transferred, but the results of each transferred case have been ascertained, and in that way the records are made complete. A large percentage of these 1,206 injured people had multiple injuries and are, therefore, listed under several heads. The percentage given is the approximate percentage. In this series of 1,206 cases there were 12 deaths The causes of death were as follows:

Burns by steam, instant death, 7;
Burns by steam, death 8 hours later, 1;
Shock following severe mutilation, 2;
Crushed body, instant death, 1;
Fracture base skull, instant death, 1.

The remaining 1,194 cases I shall first, in a general way, classify according to the nature of the injury and then according to the location. Classified by the general nature of the injury, they are as follows: lacerations, contusions, abrasions, etc., 406, or 34%; eye injuries 286, or 23%; sprains 158, or 13%; deep cuts and lacerations 155, or 12%; burns 115, or 10%; fractures 71, or 6%; crushed members 68, or 5%; nail punctures 20, or 1.6%; and dislocations 7, or .05%. In addition, there were five cases of broken teeth, four of concussion of the brain, two of traumatic orchitis, two of traumatic synovitis of knee, one of dog bite, one of heat prostration, one of electric shock from phone, one of cellulitis of hand, one of railway spine or traumatic neurasthenia, and one case of laceration of the posterior urethra. Classified in a general way by the location of the injury, they are as follows: hands 305, or 25%; eye 286, or 23%; head, neck and face, except eye, 232, or 19%; legs 162, or 13%; feet 138, or 11%; trunk 127, or 10%; and arms 100, or 8%.

It will be seen in the above series that the number of injuries of different types occur in the following order of frequency: 1st, lacerations, contusions, abrasions, etc.; 2nd, eye injuries; 3rd, sprains; 4th, deep cuts or lacerations; 5th, burns; 6th, fractures; 7th, crushed members; and 8th, dislocations. The parts of the body injured occur in the following order of frequency: 1st, hands; 2nd, eye; 3rd, head, neck and face, except eye; 4th, legs; 5th, feet; 6th, trunk; and 7th, arms.

It will be observed that the mortality rate is less than 1%. It will also be noticed that the list includes a large variety of injuries and some not usually expected among railway injuries.

The main points to be first considered in industrial injuries are the relief of pain, treatment of shock, control of hemorrhage, administration of stimulants when needed, a prevention of further infection of wounds by protection and cleanliness, and a provision for the general comfort of the patient. After this is done, steps should be taken to ascertain the extent and nature of injury and proper treatment should be provided for. Morphia should be used for pain. The treatment of shock will depend upon its severity. The psychic effect of the surrounding circumstances of an accident has a tendency to aggravate or even produce shock. It is not advisable to use a tourniquet for any length of time. When used, it should be put as nearly over the injured tissue as possible. For the removal of grease around the wounds, nothing is better than ether, benzene, or plain gasoline. This dissolves the grease, takes off the dirt with it and, at same time, is an antiseptic. If used early after injury, iodine is one of the best antiseptics for use in contaminated wounds. There is no need of mentioning soap and the long list of antiseptics which are used to advantage. Dichloramine-T is especially good in wounds with debris or dirt.

In the examination of the patient be sure to remove all the clothes necessary to ascertain extent of injury, provided the patient is kept warm and comfortable. After examination, the patient should be placed where, in the opinion of the attending surgeon, he will have the best treatment.

At this point I will mention a method of suturing tendons, which I have found satisfactory. The method is simple and no doubt

*Read before the Southside Virginia Medical Association in Norfolk, June 13th, 1922.

common, although I developed what I know about it from experience. The suturing of tendons is sometimes found difficult in minor industrial operations. With a fine needle, begin at one of the ends of the cut tendon and put in three or four continuous or running sutures along the course of the tendon

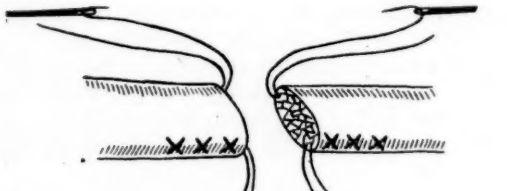

Diagram of sutures before the opposite ends are tied tight enough to bring the ends of tendon together.

for about one-quarter of an inch, taking in only a few fibres of the tendon with each bite of the needle. Then reverse the course of the sutures and come back to the point of beginning. Leave the two ends of the thread together and cut them off about four or five inches long. Put in similar sutures on the opposite side of the same end. Suture the other end of the tendon in like manner, taking care that the sutures on the two ends of the tendon are opposite each other when the tendon is returned to the normal position. Tie the opposite ends of the threads together tight enough to bring the tendon ends well together. This method does not preserve the outer coat of the tendon as well as some others, but it possesses these advantages: it can be quickly done, it can be easily performed with few or no assistants, its use is well adapted to small tendons, the union is strong enough to hold the tendon together in most any position, and it is a method that will give a good functional result.

In the diagnosis of fractures, a tender point on the bone is a good sign. The use of the X-ray, when available, is positive. It is best to X-ray all possible, rather than all probable, fractures. It is of great advantage to the surgeon when he can use the fluoroscope himself. The reduction of most fractures should be done under a general anesthetic. In handling fractures, we should differentiate between disability and deformity. The restoration of function is more important than the restoration of form.

Wassermanns are recommended in all cases of fracture with delayed union. Dr. J. H. Stokes, of the Mayo Clinic, reports that, in a series of 3,000 cases, it was found that syphilis was eight times more prevalent in railroad men than in farmers, three times more prevalent in railroad men than in business men, and two times more prevalent in railroad men than in laborers.

Prophylactic doses of antitetanic serum should be given in all cases with contaminated wounds, and repeated every six or eight days until the wound is healed.

In a previous paper before this association, I called attention to the use of local anesthesia in cases of traumatic injury. The use of novocain or apothesine in selected cases will render the necessary operative work painless. The use of these local anesthetics is practically without danger and will in a large number of instances take the place of a general anesthetic.

In the prevention of industrial injuries much has been done. One point, however, should be considered. It will be seen from the above series that almost one man in every four injured, sustained some injury to the eye. The eye is an important organ to the working man, and any preventive method would be a step forward.

I would at this time like to emphasize the importance of conservative surgery in industrial injuries. I do not only mean conservatism in severe injury, but I mean conservatism in every class of injury. The preservation of the hands, the feet, the arms and the legs are particularly important to the industrial worker, because it is with these that he earns his living. It will be noticed from the above series that 25% of all cases had some injury of the hand, and that 56% had some injury of either the hand, foot, leg or arm. Cleanliness is one of the most important measures in saving injured tissue. With a proper regard for the circulation, parts apparently injured beyond repair can sometimes be saved. Conservatism will save an arm or a leg in many instances. It is much easier to amputate an injured member than it is try to conserve it, but it is our duty not to amputate when in doubt. In injuries of the foot, the preservation of the arch of the foot is important, es-

pecially to the industrial worker. Foot injuries should be X-rayed from time to time to see that the bones are maintained in their proper relation and the arch of the foot preserved. It is very easy to amputate a finger when crushed, and when amputated it is usually well in ten days, but, if with a little more trouble on the part of the surgeon and with a little longer disability to the patient, we can save to an industrial worker a finger or a good part of a finger, this is unquestionably our duty. In treating an injury of the finger, leave all the bone possible under the circumstances, provided the flexor and extensor tendons are attached to insure its usefulness. By leaving the bone in this manner, the soft parts of the finger will grow over the end and will result in a useful finger. You can in this way save whole fingers in some cases, and in others you can save a phalanx. I have found one exception to this rule. When two phalanges of the forefinger are injured beyond repair, it is best, with the consent of the injured man, to remove also the third phalanx, making a more useful hand by not leaving a stub between the thumb and the middle finger, the future forefinger of the hand.

To obtain the best results from an industrial surgeon, the work should be done by good men adequately paid.

G. H. Sheridan, who a short while ago resigned the position as lay executive secretary of the Ohio State Medical Society after six years of a most successful work with perhaps the best organized body of medical men in America, and who is an authority on the business side of the physicians' work, says that the maintenance of proper fees makes it possible for the physician to render an adequate service.

The type of man needed for good service in the field of industrial surgery is not the one who performs his duty in a listless and perfunctory manner, taking it for granted that he will be paid for his work anyhow, but the man who is interested in each case, who is well qualified for the service, and who takes the time and the trouble to master and understand its particular problems.

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THE RELATION OF AGE TO DISEASE IN CHILHOOD.*

By WINGATE M. JOHNSON, M. D., Winston-Salem, N. C.

The relation of age to disease is a subject full of interest and, in childhood, of much practical importance. In discussing this subject, I want to consider primarily the relation of age to the incidence of various diseases, and secondarily its relation to symptomatology, diagnosis, prognosis and treatment.

The Newborn Infant.

The chief dangers in the path of the newborn infant are asphyxia, cerebral hemorrhage, atelectasis, septic infection through the umbilicus, the peculiar hemorrhagic disease of the newborn, and the so-called inanition fever. Of less danger to life but of dreadful possibility is gonorrheal infection of the eyes. Icterus is a frequent but usually benign infection. Mastitis, abscess of the breast, and even septic infection may follow ill-advised attempts to express the milk which is often found in the breasts of the newborn. Congenital laryngeal stridor is apt to give the parents much concern, though really benign. It may persist into the second year.

Congenital syphilis will usually manifest itself within the first two months, but a positive Wassermann may not develop until after the sixth week.

Of the acute infectious diseases those of the respiratory tract, particularly bronchitis and broncho-pneumonia, are the only ones com-

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mon to the newborn and are responsible for many deaths.

1. The relative immunity to the Acute Infectious Diseases which the mother's milk seems to bestow begins to diminish after the first six months, and from the second year to puberty is the period of greatest susceptibility to childhood's peculiar diseases. The Schick test demonstrates this in the case of diphtheria, showing that nearly all children under six months are immune; that the period of greatest susceptibility is from six months to six years; and that after six years the percentage of those immune rapidly increases. This infantile immunity does not hold true of the respiratory diseases.

2. Tuberculosis is rarely evident within the first six months but is most apt to develop within the first five years, the second year being the period of greatest susceptibility. While the child is rarely born infected with tuberculosis, he is very susceptible from birth to contact infection and, in the early years of life, tuberculosis is peculiarly fatal. It is very apt to become generalized. The lesson to be drawn from this can not be over-emphasized,—namely, the criminality of exposing an infant to any one even suspected of having the disease.

3. The Nutritional Diseases — scurvy, rickets, and its associate, tetany—develop between 6 and 18 months. Rheumatism, on the other hand, is practically unknown under three years. A knowledge of this fact should prevent the mistake of diagnosing scurvy as rheumatism.

4. The Digestive System.—As long as the baby is breast-fed exclusively and sufficiently, aside from such minor ailments as thrush and colic, there are only two troubles of this system to be really feared. These are hypertrophic pyloric stenosis, which is to be looked for between two weeks and two months, and intussusception, which may occur at any age but is most apt to come within the first two years, particularly between four and nine months. After breast milk is replaced by other foods, however, the danger increases in inverse ratio to the care with which the food is selected and prepared. The susceptibility of the young child to intestinal infection is well known but, in passing, I would like to say that the practice, now happily becoming wide-spread, of boiling all cow's milk used in artificial feeding has done more than anything else to prevent the diarrheal diseases of infancy. In my own experience, I can count upon the fingers of one hand the cases of dysentery seen in children fed on boiled milk.

Tonsillitis may occur early though it is not frequent under six months. A point of practical importance is that children even up to six or eight years usually have very little pain with it. The wisdom of examining the throat as a routine procedure is too well known to require emphasis. Peritonsillar abscess is rare in early life while retropharyngeal abscess occurs in the first two years only and may easily be confused with laryngeal diphtheria.

5. The Respiratory System.—Throughout the first two years of life the respiratory system is peculiarly susceptible to invasion and its diseases have a high mortality. I need hardly remind you that the large size of the bronchi and the thinness of the chest walls give a respiratory murmur normally differing from the adult type, in being harsher and more nearly bronchial.

Congenital laryngeal stridor, already mentioned, begins at or very soon after birth. In differentiating the other affections of the larynx from laryngeal diphtheria, the age-incidence is of little help as they may all occur after six months.

Bronchitis and broncho-pneumonia, as previously stated, are very frequent throughout infancy and childhood. Lobar pneumonia is rare in the first year but common thereafter. Empyema is much more frequent in early childhood and has a much higher mortality—seventy-four per cent. for the first year and fifty-nine per cent. for the second, against thirteen per cent. for older children. (Holt.) Serous effusion is comparatively rare in childhood.

It is of some importance to remember that asthma often begins in early childhood. According to Still, the great majority of all cases begin within the second and third years.

6. Otitis Media is so frequent in infancy and its complications may be so formidable as to require special mention. It is usually secondary to some upper respiratory infection and may result in mastoiditis, permanent deafness, sinus thrombosis and septicemia.

7. Circulatory System.—The heart is relatively large in childhood. Its position in the chest is nearly horizontal with the apex beat outside the nipple line, in the fourth in-

terspace. From the fourth to the ninth year it gradually moves downward to its adult location.

Excluding congenital heart disease, the heart is rarely diseased under three years. Accidental murmurs occur in nearly fifty per cent. of all children, according to Hamill and others, but true endocarditis is almost unknown under three years. Only one case occurred under this age in more than 2,000 autopsies at the Babies' Hospital in New York. The age-incidence of endocarditis is the same as its great cause, acute rheumatic infection, from three or four years up. A peculiarity of rheumatism as it affects children is its liability to affect the valves of the heart in contrast to the slight joint manifestations. The "growing pains" of childhood should never be dismissed lightly as they may be really rheumatic and cripple the heart for life. Pericarditis is much less common in childhood. It, too, is usually rheumatic in origin and has the same age-incidence.

8. Kidneys.—Acute nephritis as a primary affection is rare in childhood. It is usually secondary to some infection, notably scarlet fever, and frequently ordinary tonsillitis. During our recent epidemic of "near" influenza, I was interested to note that practically every urine examined within several days after the attack showed albumin and casts. Still more interesting was the fact that they all cleared up promptly with no special treatment. There is no special age limit for acute nephritis other than that of the infections to which it is usually secondary. The prognosis is better than in an adult. Chronic nephritis is rare under five and has an unfavorable prognosis.

Pyelitis may occur at any age but is far more frequent under two years. It may cause alarming symptoms though the prognosis is usually good with proper treatment. It rarely occurs in boys. After the second year both the frequency and severity of the cases diminish.

9. Nervous System.—Perhaps the greatest difference between an infant and an adult is the enormous disproportion between the infant's central nervous system and the rest of his body. A crude comparison is that of a dynamo capable of running a printing-press attached to a sewing machine. So much electrical energy would be hard to control with so small an outlet. Similarly, the relatively large dynamo of nervous energy pent up in the infant's tiny body is hard to control. The child is in a state of "nervous instability," to use a favorite expression of Dr. Still's. His breathing is irregular; the pulse is frequently so, particularly during digestion, when the vagus nerve supplying both the heart and the digestive organs gets its messages short-circuited. A child's heat-regulating center is more unstable and responds to infection or disturbances of metabolism with a temperature far higher than would be produced by a similar condition in an adult. Likewise, the demand for a rapid dissipation of nervous energy, which is met in the adult by a chill, may in a child cause a convulsion.

The lesion of the brain most to be feared in the newborn is cerebral hemorrhage from birth pressure, which, if not immediately fatal, is apt to blight the individual through life. To Dr. Sidbury, of Wilmington, N. C., is due much credit for pointing the way to relieving many of these cases by early and, if necessary, repeated lumbar punctures.

Idiocy, except of the Mongolian type, can rarely be recognized before the end of the first or during the first half of the second year. The peculiar features of the Mongol may make its recognition possible within the first few weeks. Cretinism may begin to show its characteristics during the latter half of the first year. Its early recognition is, of course, important, but I think you will all agree with me that it is usually best to wait for the parents themselves to recognize the presence of other varieties of mental defectiveness.

Epilepsy is most apt to begin at puberty or during the first three years of life when there is special activity of physiological development. The older the child at onset, the less the danger of mental deterioration (Still).

Tetany is regarded as a manifestation of rickets with the same age-incidence, six to eighteen months.

Chorea is generally regarded as a rheumatic manifestation and has the same age-incidence, four years and older.

Hysteria is rare before the tenth year.

Cerebral abscess is rare under ten years. Tumor of the brain is more common and is possible at any age.

Acute poliomyelitis is most usual during the second year and eighty per cent. of the cases occur within the first four years.

10. Blood.—Except in the first few years

of life, the hemoglobin is relatively low in childhood, sixty-five per cent. to eighty-five per cent., reaching the adult level at about sixteen years. The red cells are correspondingly reduced in number. The white cells are increased. The normal variations in infancy are 9,000 to 18,000; in later childhood, 8,000 to 12,000. The lymphocytes are greatly increased, varying normally from fifty per cent. to seventy per cent.

Secondary anemia is very frequent throughout childhood. Prolonged nursing or exclusive milk feeding is a frequent cause after the tenth month. Improper feeding may cause it at any time. Acute infections, intestinal parasites, syphilis, and hemorrhage are all potent causes.

Primary anemias are much more rare than secondary.

Von Jaksch's anemia is to be looked for between seven and twelve months.

Acute lymphatic leukemia is perhaps the form most frequently met, and often shows a leukopenia rather than a leukocytosis, but with a lymphocyte count above ninety per cent.

Pernicious anemia is very rare in childhood.

Chlorosis is to be looked for in girls at puberty.

Purpura occurs after the second year—later than scurvy.

True hemophilia is rarely seen before the third year and bears no relation to the hemorrhage of the newborn.

In infancy and early childhood there is an increased susceptibility to septicemia. In its treatment brilliant results have recently been obtained by repeated transfusions of whole blood immediately after the withdrawal of a corresponding amount of the patient's blood. Stetson, of New York, is doing a great deal of work along this line. He stated to me not long ago that septicemia was the most satisfactory grave condition he had to treat.

11. Lymph Nodes.—In infancy and early childhood the lymphoid tissue is in excess and is prone to give trouble. The tonsils and adenoids serve as portals of entry for infection which may secondarily affect the ear, the cervical lymph glands, and may even poison the whole system with a general septicemia.

Simple acute adenitis is very frequent in infancy, particularly from six months to two years. It is usually secondary to tonsillitis, rhino-pharyngitis, or other acute infection. Tubercular adenitis, on the other hand, is most apt to occur in later childhood, from three to eight years.

Hodgkin's disease is practically unknown under three years.

12. Bones and Joints.—Rheumatic fever is almost never found under three years. The acute arthritis and acute osteomyelitis of infants is an evidence of pyemia and is usually seen in the first year. Tuberculosis of the bones and joints, on the other hand, is found between three and eight years.

In conclusion, let me remind you that in most diseases of infancy and childhood the determining factor is most often the ability of the little patient to assimilate enough nourishment to tide him over, and any medication which tends to upset his digestion is likely to do more harm than good. I know of no better advice to leave with you than that given my class at our last clinic at Jefferson, by Dr. H. A. Hare—"For God's sake let the patient get well!"

302-303 *O'Hanlon Building.*

DISEASES ASSOCIATED WITH PROTEIN SENSITIZATION.*

By WARREN T. VAUGHAN, M. D., Richmond, Va.

Those conditions which depend either wholly or in part on protein sensitization and anaphylaxis for their clinical manifestations, form a not inconsiderable proportion of the commoner diseases. Measles and the exanthemata, typhoid fever, malaria, urticaria, eczema, hay fever and bronchial asthma, fall within this classification. In fact it is claimed, with much apparent justification, that fever in and of itself is a phenomenon of protein intoxication. An understanding of the biochemistry of sensitization and anaphylaxis is essential to a comprehension of the pathologic physiology of these diseases.

When a foreign protein is introduced parenterally into the body, it will continue to exist as such until the body cells have elaborated a ferment capable of digesting that protein. Whether it be a living micro-organism or unorganized material, such as serum or egg albumin, it will persist in the circulating

*From the Medical Clinic of St. Elizabeth's Hospital. Read before the South Piedmont Medical Society, at South Boston, Va., April 18, 1922.

blood,—and, if living, as in the case of bacillus typhosus, may multiply therein, until sufficient enzyme has been produced to digest and destroy it. Thus, the optimum time for positive blood cultures in typhoid fever is before the symptoms of the disease have become manifest. Again, Longcope has shown that horse serum injected into rabbits exists as such until after the development of serum sickness.

Normally, the body tissues are not provided with specific ferments or enzymes for those proteins which should have been digested before absorption from the intestines. Once having acquired the ability to digest a protein, however, the cells retain that power, and can reproduce the specific ferment whenever stimulated by the presence of the foreign protein. From ten days to two weeks is usually required for the original elaboration of the ferment, but thereafter the introduction of the protein calls forth an almost instantaneous production of the ferment or antibody.

Every protein consists of a poisonous and a non-poisonous portion. The poisonous portion of the molecule is in all probability chemically and biochemically similar in all proteins. The non-poisonous portion is different, for every protein, and on this differentiation rests the specificity of the protein. The newly formed ferment digests away the specific nontoxic portion of the molecule, thereby liberating the poisonous fraction. Symptoms of protein intoxication result from the liberation within the body of the poisonous non-specific portion. While the tissues are first learning to produce the ferment, the protein is split slowly, so that at no one time are large amounts of poison present, and the symptoms are either absent or very mild. However, mild symptoms may follow even the first injection of foreign protein, as in the familiar cases of serum sickness. The slow liberation of poison prevents any serious reactions.

If, after the body cells have become sensitized—have learned to pour out rapidly the new digestive ferment or antibody,—the antigen or foreign protein be again administered parenterally, the high resultant concentration of ferment produces such rapid digestion, and liberates such large amounts of poison in a short time, that serious symtoms result. In this way, typical anaphylactic shock is produced. The symptoms are not necessarily respiratory. In the guinea pig, anaphylactic death is respiratory and the symptoms are of asthma. In the dog, they are chiefly circulatory. All parts of the body are involved in anaphylactic shock, and the symptoms may vary accordingly, although they are usually manifested by dyspnea and urticaria with the general symptoms of shock.

In typhoid fever, when the tissues at length become sensitized, the growth of the bacilli in the circulation has produced such large amounts of protein to be digested that serious symptoms ensue, with the clinical picture of typhoid fever. In malaria, the extrusion of the plasmodia from the red cells into the plasma where digestion rapidly occurs, gives rise to the characteristic rigor and high fever. In the exanthemata, as in typhoid fever, the incubation period is that interval during which the invading parasite is multiplying in the tissues, and in which the body cells have not yet become sensitized. The measles rash is probably an anaphylactic or sensitization phenomenon. Meltzer suggested in 1910 that bronchial asthma may be an anaphylactic phenomenon. Since then many workers have studied hay fever and asthma as a possible sensitization disease. Walker has been a pioneer in this field, and we owe much of our practical knowledge to his painstaking investigations.

For some unknown reason, certain individuals absorb pollen protein undigested into the circulation and thereby become sensitized to it. In succeeding pollen seasons, repeated absorption gives rise to anaphylactic symptoms. We do not know why some people become sensitive, while others do not. Mechanical abnormalities in the nose probably play a part. It has been shown that protein of this nature can be digested to a certain extent by the normal nasal secretion. But with defective aeration, as behind a nasal spur, abnormal quantities of mucus collect, and here the protein is incompletely digested and is absorbed through the nasal mucosa. It has also been shown that the absorption of undigested protein through an apparently intact mucous membrane renders that surface more permeable for subsequent absorption of protein. An overdose or massive dose of pollen might overcome the resistance of any individual, irrespective of local pathology. Sewall has pro-

duced sensitization in guinea pigs by application of horse serum to the nasal mucous membrane.

Much has been written on sensitization in asthma and hay fever, and many illustrative cases have been described. I have, therefore, chosen only a few illustrative cases from my series which have been particularly interesting to me, as being unusual, or as indicating sensitization in conditions other than typical asthma or hay fever.

The first case is one of typical bronchial asthma with sensitization to a food protein alone, and which showed striking therapeutic results:

Mrs. M. D., Case No. 6285. Diagnosis, bronchial asthma. The onset of the asthmatic attacks was six years before the time of first examination (June, 1921). Previously, she had been perfectly well. The development was sudden, and for the last six years not a day had passed in which she did not have at least one, and frequently several, attacks of asthma. They almost always started at night after going to bed, but occasionally also in the day-time when up and about. The patient had had various forms of treatment, including several "serums," the omission of certain articles of food from the diet, etc. She had spent some time in a tuberculosis sanatorium She had never had urticaria.

The patient was examined by the usual routine, and gave a clearly positive skin reaction to the protein of cocoa, with a borderline reaction to ten other proteins, including wheat glutenin.

The patient omitted all of these articles from the diet, and during the succeeding nine months has had but one attack of asthma, and this definitely following a break in her diet, when she ate some hot wheat bread. She has gained around fifteen pounds in weight, and, whereas she was previously house-fast, she now gets around and does what she pleases without discomfort.

The second case is neither hay fever nor asthma. The symptoms, however, resemble very much the former:

Mrs. M. A., Case No. 279, aged 47, housewife, dated present illness from April, 1921, when she had three teeth extracted for the relief of toxic headaches. Root abscesses had been found previous to the extraction. Soon afterwards she developed a rhinorrhea. She would develop sudden violent attacks of sneezing, without apparent provocation, followed by "streaming" of watery fluid from both nostrils. At other times the nose would be so stopped up that she found it necessary to use adrenalin for relief. The attacks were irregular, coming more frequently in the early morning. Irrigations gave only temporary relief. She had been examined by a competent oto-laryngologist, who found no local pathology, and was inclined to consider the condition nervous. The patient had never had hay fever. She had never before had a condition similar to the present. The present illness began before the onset of the pollen season.

The patient was tested with various pollen, food, bacterial and epidermal proteins, and gave a negative reaction to all except corn pollen, chicken feathers, goose feathers, dog hair, diphtheroid bacillus, and streptococcus viridans. There was no dog in the home. Cultures from the nose showed a pure culture of micrococcus catarrhalis. A vaccine was prepared from this culture.

The strongest reaction in this case was with chicken and goose feathers. The patient was therefore directed to procure "silk floss" pillows, and to discard all feather pillows. She was not seen again until one month later, when she reported that removal of the feather pillows had given practically immediate and permanent relief. It has not been found necessary to use the vaccine. At the present time the patient reports that she has continued symptom-free except for three days in December, when she inadvertently ate a small amount of corn. This dietary indiscretion was followed within a few hours by rhinorrhea. It is worthy of note that in this case the patient did not react to the protein of the corn grain, but to the corn pollen. It was the grain, however, which produced symptoms.

The next case is somewhat more complicated. The patient shows multiple sensitization, and clinically has both hay fever and a vasomotor rhinitis, together with what he describes as "bronchial asthma."

Patient W. A., No. 6182, male, aged 32, insurance agent, was admitted to St. Elizabeth's, November 23, 1921. He complained of hoarseness and shortness of breath, with a chronic cough, and occasionally the raising of blood.

The patient had had hay fever regularly for the preceding five years, lasting from early in August until the first frost. Toward the end of each attack he would develop a cough with wheezing and shortness of breath. During the last two years he had frequent typical asthmatic attacks. Following the last attack of hay fever in 1921, the pulmonary symptoms persisted, with constant cough, hoarseness, anorexia, and the raising of some yellow, mucopurulent, tenacious sputum, often streaked with bright blood.

This patient's symptoms first began with uncomplicated hay fever. After a few recurrences the attacks lasted longer, and were accompanied by pulmonary symptoms of an asthmatic character. Finally, following the last hay fever season, the condition has persisted with symptoms of chronic bronchitis and bronchial asthma.

In addition, the patient described atypical attacks of "coryza" since childhood, coming on after meals. If he lies down for a time after eating a heavy meal, he will awaken with sneezing and a watery discharge from the nose, which may persist throughout the afternoon or evening, and until the next morning. This occurs irrespective of pollen seasons.

The patient was tested out with the proteins routinely used. Among the pollens he gave a four plus reaction to short ragweed, two plus to corn, and one plus to daisy, goldenrod and black walnut. Among the epidermal proteins there was a one-plus reaction to cattle hair and to chicken feather. The food proteins giving a positive reaction were corn, strawberry and oat, four plus; grapefruit and turnip, three plus; pea and wheat glutenin, two plus; and potato, rice, sweet potato, tomato, lima bean, wheat gliadin, wheat proteose, wheat leucosine, plus-minus. The patient gave a one-plus reaction to the protein of diphtheroid bacillus.

In this case the sensitization appears to have been primarily to a pollen protein alone. During an attack of hay fever, the opportunist organisms present in the normal respiratory mucosa found opportunity to grow in the damaged mucous membrane. It is probable that there was early sensitization to some of the food proteins as indicated by the long history of vasomotor rhinitis, occurring after heavy meals. The strongest reactions were to corn, strawberry and oat, and it is possible that one of these was the original sensitizing protein.

The treatment in this case has been directed, first, against the bronchitis; second, against the food intoxication; and third, against the pollen sensitization. In addition to medicinal therapy for the bronchitis, an autogenous vaccine was prepared. The patient was directed to omit all four plus, three plus and two plus articles of food from the diet, and was cautioned against taking cold. Improvement was almost immediate, and from December, 1921, until the end of March, 1922, the patient was practically symptom-free. He was taking the autogenous vaccine over this period and, as soon as the vaccine was discontinued, his symptoms began to recur in altered form. He no longer had his attacks of asthma or rhinitis, but he coughed more. In other words, the bronchitis alone returned.

It frequently occurs that several courses of vaccine must be administered, and sometimes this must be continued for a long time, the patient feeling well only while taking the vaccine. It will be important to desensitize this patient before the next pollen season, or to have him go to some locality, such as Florida, where there is little or no ragweed pollen.

The hay fever in this case is clearly due to pollen sensitization. The vasomotor rhinitis was, with equal probability, a result of food sensitization. The bronchial asthma on the other hand, was more probably not a true bronchial asthma, but rather an asthmatic bronchitis. The infection causing the bronchitis undoubtedly obtained a foothold in mucous membrane already damaged by hay fever, but that it was a true bronchitis and not a pure asthma is indicated by the fact that the patient constantly raised large amounts of sputum, and that rales were always to be heard in the chest. During the period in which I had him under observation he had many spells somewhat resembling asthma, but evidently due to difficulty in raising the thick, tenacious sputum, and the breathlessness occurred more from the effort expended than from bronchial spasm. This condition, described by Walker as "asthamatic bronchitis," results chiefly from mechanical causes. Bacteria rather than unorganized proteins are usually the causative agent, and there may or

may not be recognizable sensitization to these bacteria.

The next case is one which illustrates better this condition of asthmatic bronchitis, in that it is less complicated by other findings. The effect of mechanical irritation by dust is very distinct:

Mrs. A. M., No. 6352. Diagnosis, bronchial asthma, chronic bronchitis, and hay fever. Duration of symptoms, eleven years. First seen August 24, 1921. During the first two or three years her symptoms had been limited to attacks of hay fever, but asthmatic attacks soon supervened. On examination she had a chronic bronchitis and raised considerable sputum at all times. There were frequent superimposed "asthmatic" attacks. It is interesting to note in her history that shortly before examination she had been out of town for seven weeks, during which time she had had no asthma. Immediately upon her return home the attacks recommenced.

The patient was tested routinely with the various proteins, and was found to react to sunflower and daisy, with a milder reaction to giant ragweed, short ragweed and June grass. There was a completely negative reaction to all epidermal and food proteins except rice, which gave a very mild reaction. Thus, we have a case sensitive only to pollen proteins, but who has chronic bronchitis with attacks of asthmatic bronchitis throughout the year. The assumption was that the case was pre-eminently bacterial.

An autogenous vaccine was made. In view of the curious history of freedom from symptoms when away from home, a search was instituted for anything in the house which might be causing the attacks. There were no pets, no domestic animals, and no birds. The floors were covered with old-fashioned carpets, and were quite dusty. I suggested that the carpets be removed, the floors cleaned, and that rugs be substituted. This was done, in conjunction with the administration of autogenous vaccine. During the intervening five months the patient has, according to her report, been absolutely well, except for one spell of asthma one month ago. She had been telling a neighbor of the excellent results obtained by removing the carpeting from the floor. Her neighbor decided to do likewise with some linoleum, and the patient offered to help her. That night, according to the physician who attended the patient, she "almost died" of an attack of bronchial asthma.

I have been particularly interested in the study of two other diseases in relation to protein sensitization. There have been some suggestions in the literature that they might be dependent on protein sensitization, but little experimental work has so far been reported. These are migraine and mucous colitis. The latter disease is not entirely dissimilar to bronchial asthma. In both diseases the two outstanding features are smooth muscle spasm and increased secretion of mucus. The difference lies chiefly in location within the body. In both conditions, headache of a migrainous type is rather common. Headache was first described as accompanying hay fever in 1600. Naturally, there are many causes of clinical migraine, but some cases apparently are due to protein sensitization. The two following illustrate this point:

Miss M. M., Case No. 6355, aged 30, was first seen in July, 1921. Her chief complaint at that time was enterologic. In September she began having severe headaches of a migrainous nature, coming on as often as three times a week. These persisted without let up. On December 4th she was tested with the various food proteins, and gave a two plus reaction to sweet potato, turnip and rice, and a one plus reaction to chicken, pea, oat, corn, cocoa and wheat glutenin and wheat leucosine. The reactions did not become positive until six hours after the test was made.

The patient was directed to omit rice, sweet potato and turnip from her diet. From that time until the present she has had no recurrence whatever of her migraine. It developed after the test that she was very fond of sweet potatoes, and had been eating them daily for the preceding three or four months. The patient has been under my treatment for various other conditions since July, 1921, so I do not believe that suggestion can play any part in this case.

Miss H. F. No. 6323. Diagnosis, migraine. The patient had been subject to attacks of sick headache during early childhood. They had ceased at the age of seven, and she had been headache-free until 1918, when the symptom returned. At first the attacks came at two or three months' intervals, but the fre-

quency increased, so that at the time of examination she was having typical migrainous headaches as often as once a week.

After various other forms of treatment had been tried, the cutaneous tests were applied. Strongly positive reactions occurred to sweet potato; positive to beet, turnip, wheat glutenin and wheat proteose; and suggestive to cocoa. These articles were omitted from the diet. It has been but one month since this test was completed, but the patient has had no attacks since that time.

I have not had as completely satisfactory results in mucous colitis, but so far they have been most suggestive, as illustrated by the following case:

Mrs. G. F., No. 6126. Diagnosis, mucous colitis. The patient was first seen in October, 1921. She had made the rounds of the doctors, and had received many diagnoses, but little or no benefit. She complained of diarrhea with intense tenesmus and the passage of large amounts of mucus in the stools, over a period of two years. She had also had considerable headache of a migrainous type.

After considerable local treatment, we tested the patient out with the various proteins, and obtained a weakly positive reaction to beet, chicken, strawberry, casein, grapefruit, turnip, wheat, cocoa, peanut, crab, celery, coffee, orange, mackerel, cabbage and banana.

One of the proteins to which she reacted more strongly was wheat. After learning of the results, the patient remarked as a curious coincidence that whenever she had had an attack of colitis her mother would place her on a "light diet," consisting of tea and toast, and her symptoms invariably increased. All the articles described were omitted from her diet, and there followed very distinct improvement, although not complete recovery, which has persisted until the present time. The patient reports that she walks a mile each day, and visits friends, without fatigue,—whereas a year ago walking one block would have so exhausted her that she could not sleep at night. She now averages nine hours' sleep every night. Her appetite is good. She has gained slowly in weight. There have been rather frequent setbacks, but the general condition has improved quite steadily.

Chicken had been omitted from the diet. Three months later she ate chicken on two occasions, and following each there developed an acute attack of colitis. The description was the same for each attack. During the first two days there were pricking pains in the bowels, and thread-like formations of mucus were passed. The bowels became increasingly irritated, until the patient finally described herself as "sick from head to foot." The two attacks lasted equal periods.

Urticaria is freqently or perhaps always a sensitization phenomenon, and the patient himself is often able to describe the article of food which brings on the eruption. But frequently no protein can be found which will react in the cutaneous test, and the sensitization appears to be due to bacteria located in some focus within the body. Removal of the infection sometimes gives relief.

Just a word as to what actually occurs when a patient is desensitized, as in the prophylactic treatment of hay fever. The explanation is, of course, entirely theoretical, but it enables us to visualize the process fairly satisfactorily. We can desensitize with small doses of pollen, increasing the amount gradually, until, when pollenation commences, the patient develops no symptoms, or, at most, has but a very mild reaction. Nevertheless, at the end of a year the whole process must be gone through again. Our "immunity" has been but temporary. We have effected no permanent change in the body tissues.

In pollenosis, the symptoms are due to the poison liberated. In prophylactic immunization, likewise, the protein poison is liberated in the tissues. The introduction then of gradually increasing quantities of protein poison induces an increased tolerance, or resistance against its action on the body cells, quite analogous to the increased tolerance developed by morphine habitues. It has been shown experimentally that "immunity" to the protein poison, as we ordinarily conceive of immunity, (antigen-antibody reaction), does not exist. But tolerance of increasing degree can be acquired by repeated injections, so that in guinea pigs, for example, the injection of three or four times the minimum lethal dose may frequently be received without fatal outcome. In desensitization, tolerance is probably not the only reaction induced. The state produced appears to be one of anti-anaphylaxis, and presumably several factors enter into the reaction.

but the others are still quite hypothetical, and for present purposes it will be simpler to consider only the state of increased tolerance.

If you were sentenced in a court of law to be given, on August 15th of this year, subcutaneously in one dose three grains of morphine, what would you do? You would start today, taking small doses, and gradually and constantly increasing the dose until you had acquired a tolerance to morphine such that on the 15th of August the administration of three grains subcutaneously would produce little or no reaction in your case. Tolerance is not permanent. Neither in the case of morphine nor in pollenosis is acquired tolerance a true immunity. No antibody has been formed. The protection cannot be passively transferred from one animal to another, as in immunity. Finally, the increased resistance is not permanent. Long before a year has elapsed the results of prophylactic inoculation have been entirely lost and, as would be the case with morphine, the entire process must be gone through again.

SUMMARY AND CONCLUSIONS.

In many diseases not ususally considered as anaphylactic, the phenomena of sensitization and anaphylaxis play an important part.

The biologic reactions causing symptoms are discussed.

Asthmatic bronchitis should be clearly differentiated from bronchial asthma.

Cases are reported which indicate that migraine, mucous colitis, and vasomotor rhinitis, or rhinorrhoea, are frequently sensitization phenomena.

In desensitization, a condition of increased tolerance to the protein poison is produced, analogous to tolerance induced by increasing doses of morphine.

617 *West Grace Street.*

THE DEVELOPMENT OF PUBLIC HEALTH ACTIVITIES IN RURAL DISTRICTS.

By Surgeon W. F. DRAPER, U. S. Public Health Service.
In charge of Cooperative Rural Sanitation, State Board of Health of Virginia.

To the members of this Association from New York, Boston, and other municipalities, it may seem that health conditions of rural communities is a somewhat foreign subject. A few moments of consideration, however, will show that this is a matter which is closely related to the health and welfare of people in the cities as well as to those in the country.

Milk produced on farms where insanitary conditions exsit and the people are ignorant of the first principles of the transmission of disease is a less desirable commodity than milk produced under healthful conditions. Fruits and vegetables contaminated by seepage from an insanitary outhouse or gathered from soil which is grossly polluted by improper methods of excreta disposal may play an important role in the spread of disease among city consumers.

Automobile transportation affords a rapid means of communication between the city and the country so that the city dweller, almost before realizing it, may find himself amid rural surroundings, exposed to any unhealthful conditions which may exist.

These facts are recognized very generally by city health authorities who issue advice to their people at the beginning of every summer season to ascertain the health conditions of the places in which they are planning to spend their vacations, and to avail themselves of the protection afforded by antityphoid vaccination.

From the economic standpoint also, health conditions in the rural districts have a direct effect upon the people in the city. The efficiency of farm labor in many sections of the country is materially reduced by malaria, hookworm disease, and other readily preventable infections. The increased overhead expense caused by labor turnover and loss of time must be met by the ultimate consumer in the higher price for food and clothing.

It seems very desirable, therefore, that an Association concerned with any phase of public health work should have some knowledge of the principles underlying the development of public health activities in our rural districts.

The distinct purposes of public health work are the prevention of disease and the promotion of health. The work should be so administered that it will accomplish the maximum results with the money available for expenditure; and it is a condition precedent to the attainment of maximum results that the first consideration in any community should

*Read at meeting of American Association for Promotion of Hygiene and Public Baths, Brookline, Mass., May 10, 1921.

be to determine the particular variety of health activity which, for a given cost, will result in saving the greatest number of lives or reducing most appreciably the record of sickness.

For example, in certain districts, typhoid fever and the other filth-borne diseases are prevalent to such an extent as to constitute a real menace. It is a comparatively simple thing to control these diseases—it is merely a matter of adequate sanitation. So, under such conditions, it must be obvious that money spent in such districts for sanitation will yield greater, more rapid, and more definite returns in lives saved and sickness averted than could a like sum expended for any other purpose.

Sanitation is, therefore, the logical work to undertake as the first step. When these diseases have been brought under control, the next most important work will have to be determined; and that work must be decided by the same factors that governed the first undertaking—the saving of lives and the prevention of sickness. All developments of public health undertakings must be considered from this standpoint. This does not mean that only one activity should be undertaken at a time; if there is money available for diverse undertakings and there is a need for varied activities, health work may be ramified so extensively as to cover the widest field; but it is unwise, irrespective of funds available, to follow immaterial lines, however spectacular they may be, and ignore the important fundamentals.

Furthermore, it is almost invariably unfortunate when various health efforts in any community are conducted in a disassociated and unrelated way. Instead of harmony there is apt to be discord; instead of the proper unity of purpose, there is only too often a palpable striving on the part of one agency to do work that will gain it acclaim over another. No matter how varied the health work of a district may be, how wide the field, how ramified the sphere, all activities, valuable for the district, may be correlated if there is an acknowledged leadership, and each agency can and should work as if it were a part of a whole rather than an individual unit.

So we may assume that the matters of primary and fundamental importance are the diagnosis of the local needs and the establishment of a logical sequence for the lines of work to be undertaken. These are not problems of difficult solution; but if they were they could be solved. The public health field affords such marvelous opportunities for the development of a healthier, happier and more prosperous people, that it has attracted and is attracting not only enthusiastic supporters for the work but enthusiastic workers.

Lloyd George, lamenting the showing made by English recruits before the boards of medical examiners, declared that the health of England was of primary importance because it "is impossible to create a Class A empire out of Class C people." Our own army rejections were on a par with England's. They exhibited conditions which had been unsuspected, they forced into the forefront for intelligent consideration the problems of public health which had theretofore interested a comparatively small portion of the general public.

Now, every phase of public health activity has its advocates. All are important, and the advent of additional enthusiasts is to be welcomed; but there is, nevertheless, in this one outstanding danger, the tendency to overdevelop the more attractive and appealing lines at the expense of the less spectacular and more important branches.

I might liken the development of public health work to the growth and spread of a tree. From the ground upward each advance means the saving of lives through the prevention of sickness or the increase of vigor through the promotion of health. But the tree has branches, similar after a fashion, yet each distinct from its fellows.

Trees of the same family are not all alike. The maple of Vermont is not the maple of the Virginia hills: and, while it may live unchanged after transplantation into the southern soil for one generation, it changes its characteristics or loses its vigor when it reproduces. The problem of Massachusetts is not the problem of Minnesota and still less the problem of Louisiana.

But in one essential all trees are the same and so are all health efforts—unless the main trunk is strong, is durably rooted, is really vital, the branches will not endure, however green and vigorous they may appear. If we select the right sort of slip for planting or grow the proper seedling, nurture it, guide it, train it, fertilize it—we will have a plant

of which we may feel justifiably proud; and it will then be a matter merely of detail so to regulate the growth of the branches that the less useful may not obscure the more, and that the development shall be to the ultimate advantage of the field.

I have recently been engaged in rural sanitation work in Virginia. That Commonwealth, blessed with an unusually mild climate, is a natural home for those diseases which can only be controlled by perfect sanitation. Like the other States along the South Atlantic littoral, Virginia also has a large section of swamp area. Consequently, typhoid fever and malaria have been menaces in that State. The main efforts of the Virginia authorities have been directed toward the control or eradication of these evils.

I believe that Virginia affords an excellent example of just what is meant by the development of public health activities in logical sequence. For those counties in which no public health work has been done and in which there is but little understanding of the benefits to be derived, the State advises a single sanitary officer and, through a co-operative arrangement with the U. S. Public Health Service, supervises his work, and lends financial assistance in maintaining him.

As the results of improved sanitary conditions become apparent, opposition is allayed and sentiment for a more comprehensive plan of health work develops. A county nurse is then added to the nucleus already established. In many of our counties it is probable that the combination of sanitary officer and nurse will be all that can be supported for some time. It is a mistake to endeavor to establish new work at a rate faster than the community is ready to go. When this is done, the entire structure is liable to collapse, leaving nothing behind it.

The third step in the development of county health work is the more nearly adequate county health organization conducted on a co-operative basis with the State Board of Health and other agencies and consisting of a health officer, nurse, sanitary inspector and office assistant. With such an organization, practically every phase of public health work necessary for the average county can be conducted.

The fourth and highest stage of development in county health work is that in which the county supports its own health organization without outside assistance.

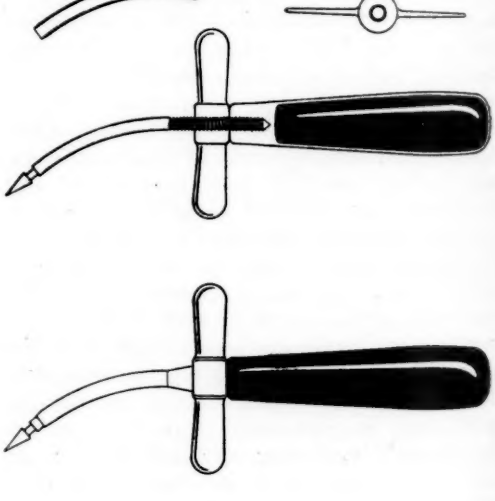
It is quite possible that certain highly specialized branches of public health work might have been introduced into these communities and have accomplished remarkable results in controlling some trouble of minor consequence while entirely overlooking and over-shadowing the less spectacular but more important work of starting at the foundation and building up. That is bad for health work; it is as if a huge oak branch were grafted upon a Norway poplar. Eventually it may kill the tree.

And so I feel justified in urging you, as I do all such groups as yours, to bend your efforts to the proper rather than the improper development of public health work, to see that each progressive step is the logical successor of those which have gone before, to the end that the structure when completed may be effective, sound, and permanent.

MAXWELL ANTRUM PUNCH.*

By G. MADISON MAXWELL, M. D., Roanoke, Va.

The increasing importance of the antrum of Highmore in its bearing on diseases of the eye, ear, nose and throat, has impelled me to try to devise an efficient and simple instru-



THE MAXWELL ANTRUM PUNCH.

*Demonstrated at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology in Roanoke, April 13, 1922.

ment for the drainage of the sinus. The opening made by the simple canula and trocar closes up so quickly that the patient and doctor both soon tire of the treatments; and the more or less clumsy punches make of the operation a rather pretentious affair.

The instrument here shown, which combines the canula-trocar and punch, works very nicely, and gives us a more permanent opening than the trocar alone, and is much simpler than the usual punch.

The instrument is plunged through the antrum wall just as the canula-trocar, until the small neck is reached; then the thumbscrew is turned, pushing the canula forward over the trocar, thus cutting out a small button of bone from the antrum wall.

This instrument can be gotten from The Max Wocher & Son Company, Cincinnati, Ohio.

MORAL CONDITIONS OF THE PRESENT DAY.*

By EDWIN M. MANN, M. D., Kenbridge, Va.

I desire to take a few minutes of your time to consider a subject of vital importance, one which deeply concerns the mental, physical, moral, and spiritual welfare of our State. With the the exception of our duty to our God, our moral obligations to womanhood are the most sacred of all obligations. The late war has brought a decided waking of the American people to the need of serious consideration and prompt action in facing the great problem of the day,—public and social moral principles. If the Virginia people desire to live and develop steadily into a better State, mentally, morally, physically, and spiritually, then the people of Virginia must be taught to understand the great value of certain moral principles.

This present public problem of morality is largely one of education. We are not a people that can be driven to do things blindly; there must not only be a reason, but the people must know that reason, before we can gain their intelligent cooperation with our efforts in their behalf.

The practical thinking men of the present day base their hopes of moral progress on the education of the masses as the real ground work of State health, virtue and prosperity. This embraces a consideration of the various influences operating upon society, whether for its material good or its actual deterioration, with a view of extending the former, and preventing or lessening, as far as possible, the effects of the latter. It involves the enactment of laws by which the safety of the whole may be protected against the errors of a part, and, above all, it should aim at the prevention of immorality by the removal of its avoidable causes. We must always bear in mind that public health and financial improvements in man's material surroundings will not compensate for social transgressions against the laws of morality; for public and social virtue is essential to public health and both to State prosperity. Goldsmith describes us as a land "where wealth accumulates and men decay." True or not true, it is the way that others see us.

If this State of ours was worth fighting for and dying for against German guns, then surely it is worth fighting for against any enemy that threatens our moral principles. The present deadly enemy to our State and Nation, an instrument for the destruction of our morality and virtue, has not only threatened us, but has secured a foothold in the very vitals and foundations of our State. "We can not ignore certain social customs and habits which are certainly tending to increase immorality." Among them are immodest dress, modern public dances, unchaperoned night automobile rides and the instrument that prevents conception. I am dealing mainly with the latter in my appeal to you. There has been a considerable and constant increase in the number of divorces; illegitimate births have been occurring in circles where such disgrace was formerly unknown; society workers tell us about the increasing delinquency among our younger girls. When modesty ceases to be a virtue, prostitution begins; when the standards of women are lowered, civilization is threatened and, so long as the State of Virginia fails to prohibit the making and using of instruments that prevent conception, it will drag our manhood and womanhood down into the ditch of shame and ruin. The continuation and advancement of the present conditions means the overthrow of all moral and spiritual law and order, the upheaval of our moral obligations, the production of a literal state of chaos among our people, the brutali

*Read by title at the meeting of the Southside Virginia Medical Association, in Norfolk, June 13, 1922.,

zation of our manhood, and a collapse of our present day civilization.

The wiping out of the red-light districts has minimized commercial vice, but I can state with certainty that there is twice as much private and social prostitution as there ever was before. "The devil, the ancient tempter, driven from one line of trenches, begins his attack from another." Yes, he is in better position to reach further with his evil; he is better entrenched in secret places than in an open front and, with his present instrument of sin and his present trenches, he is better capable of destroying his opponent than ever before. Unless we can destroy his present source of supply of arms, God only knows what will be the final result.

Virtue is the most sacred jewel in Virginia's crown, yet it is the only jewel unprotected and unguarded by the strong arm of the law. Negligence of the moral principles of true womanhood, the defect in our true manhood, and the State laws unprepared to defend and safeguard the virtue of our women, involve a deep shame upon our people and State. A true motherhood and protective laws to safeguard the womanhood of the coming generations is certainly one of the fundamental principles of a good and secure government.

There are a certain class of instruments daily made by the thousands and freely distributed among our people, with no law or effort being made to stop the making or sale of the same,—an instrument intended only for the destruction of the sacredness of our motherhood, an instrument for destroying the purity and nobility of our womanhood, an instrument made to be used to ruin and overthrow the moral principles of our young manhood. For a proud race, jealous of the honor of its women, to allow the present conditions to exist, conditions that threaten the very foundation of the virtue of our women, is a disgrace to a civilized, Christian people. While the government is making a fight for the disarmament of the nation, let every true man join in the fight to disarm our people of an instrument which aids and tends toward the ruin and destruction of what is sacred in every true man's heart, the morality and honor of our women. The makers and salesmen of these instruments aim at the demoralization of our social fabric, and there is no more subtle debauchery of both mind and body than the corruption of fidelity, the seduction from purity or virtue by the use of an instrument that tends to destroy the sanctity and honor of our homes and community.

I believe that there is an awful danger at present which threatens not only the bodily and mental welfare of mankind but threatens the extermination of the American race. There are men, like the handlers of the instrument of degradation and shame, men who have foresworn all that is good and noble, who are sacrificing all moral principles for material advantage, who are behind the present conditions and, unless something is done to forestall it, it will drag our manhood and womanhood down to shame and ruin. With these instruments in the hands of our young men, they are ready to guarantee the women against motherhood and thus secure them against publicity in this sacrifice of morality and virtue.

We must organize a defense in the State by every available means, educational, remedial, and legislative, against all forms of immorality and vice. Remedial activities should be adopted that aim at securing the most wholesome social environment by the elimination of all factors which tend to weaken or destroy the home and oppose the best development of the individual. An outstanding factor is sex delinquency which results in prostitution and the dissemination of immorality.

Unless we are ourselves degenerates, who do not belong beside the four women who are nearest and dearest to us, our mother, sister, wife and daughter, sex indulgence must mean to us exactly what it would mean to us to have one of these women betrayed or misused. Just where would such an event rank in our emotions?—Would it stack up with petty larceny or murder?

We can not build a civilization on male and female prostitution; we can not build happy and confident homes on the loose sex life of our men and women before marriage; we can not satisfy our higher human nature by being chivalrous only to our sweethearts and wives as an emotional compensation for using, for selfish purposes, girls of less fortunate circumstances. Human society cannot progress half lustful and half clean, any more than the nation could survive half free and half slaves.

Deeper still, no individual can reach for himself an enduring and satisfying life, half

a debaucher of sex and half a supporter of a family. Sex and love mean the home of democratic faithfulness and happiness; these two do not mix. Virginia has not only in her principle to face morality and religion, the same spirit of imperialism that we fought in France, but she has to contend with the same breed of disloyal grafters, profiteers and slackers that would have betrayed us during the war. We must recognize that a traitor to principle and virtue is a traitor to the State wherever he is found—on the park bench or the clubhouse, in the physician or the millionaire, in the seat of the State Legislature or even in the pulpit of the church.

Virginia dare not continue to ignore the danger that is in the work of the emissaries who are seeking to weaken the moral principles and virtue of our womanhood and who, by breeding this immorality, are trying to bring about the downfall of our nation and replace the Stars and Stripes with a flag that is as foreign to our American independence as the flag of the German Kaiser himself. An effort to assist or allow immorality is nothing less than imperialism, and is antagonistic to every principle of true Virginia citizenship.

It has reached a time when we must fight for the recognition of that moral principle and virtue without which the independence won by our grandparents in 1775 will surely, like the Greek and Roman nations, perish from the face of the earth.

If our manhood and womanhood fail to check the destruction of human life by preventing disease and by upholding the character and virtue of our people, by elimination of the instrument of ruin and destruction, then shall the manhood of our beloved State, in their conscience, see the writing on the wall, "the traitor to womanhood and moral principle is most accursed."

GASTRO-INTESTINAL DISORDERS OF INFANTS.*

By RUSSELL M. COX, M. D., Portsmouth, Va.

I have been asked to discuss the subject from the standpoint of etiology, pathology and symptomatology. I believe it has been selected as a topic for discussion today, because of the appropriateness of such a subject at this particular season. That it is appropriate and beneficial for us to review this subject now cannot be doubted when one sees on every hand the prevalence of gastro-enteritis in infants. I have not come in contact with the conditions in the rural and small-town sections of Virginia but, while spending some time last week in an Eastern North Carolina town, I was asked by local physicians to see several babies who were acutely ill with such an upset, and was told by them that the rural districts were full of sick babies with gastro-enteric upsets. At this time of year it constitutes at least three-fourths of my practice. Some of the babies get dangerously ill and some of them die. What is more, it is a most difficult job to say at the beginning of these upsets which baby will be only moderately ill and which will die.

With these things in mind, I feel that every physician should stop for a moment at the beginning of the hot season and take account of stock. He should ask himself whether he is capable of differentiating the various types of diarrheas, of deciding from the symptomatology of the case and the study of the stools as to just what is the pathology of the involved bowel; and whether, having recognized these things, he is thoroughly conversant with the modern recognized methods of treatment for the various diarrheas. So I request today a moment's sober thought with me while we review the generally accepted facts about so-called "summer diarrheas." Let us stay away from a careless attitude toward these diseases. If one begins to assume the attitude that summer diarrheas are all alike, that it does no good to try to discover the cause, that no benefit is to be derived from an effort to place each upset in the classification and understand the pathology of the case, then one is next door to the rut of empirical treatment. Very soon that doctor will be prescribing the usual purgation followed by a bismuth mixture, and he will say nothing to the parent about dieting the case. It is surprising how easy it becomes to get into this rut, and is surprising how many physicians in the larger cities, where every facility for proper treatment is at hand, become careless in the treatment of these upsets in children.

I shall consider first the etiology of the group of "summer diarrheas" as a whole. There are several important predisposing fac-

*Read before the Southside Virginia Medical Association at Norfolk, June 13, 1922.

tors: most important, that of age. The greatest frequency of diarrheal diseases belongs to the first year of life; and after the second year there is a rapid decrease both in occurrence and mortality. This factor of age is easily understood if one considers the delicate structure of the mucous membrane of the digestive tract in infants, its susceptibility to injury even in the healthy infant, and how it is constantly exposed to injury, either chemical or mechanical, and to infection. Poverty, crowding, uncleanliness, chronic disorders of digestion, malnutrition, marasmus, and rickets are all especially important predisposing factors. Most striking is the prevalence of the diarrheal diseases in the heat of summer. The incidence and mortality seem directly proportional to the heat of summer. And it seems to be a certain fact that atmospheric heat itself, besides producing a higher bacterial contamination of milk, acts directly to produce the disturbances of metabolism which are followed by indigestion and diarrhea. The influence of the diet in the first year is a big etiological factor. It is estimated that less than 5% of the really severe cases of diarrhea are among the breast-fed, and fatal cases are extremely rare. Time and again we see illustrated the importance of diet. For instance, in factory towns, where the mothers go out to work and almost all babies are bottle babies, the incidence of diarrheal diseases is extremely high. And when a city has to go through labor trouble with the working class of people out of work, and consequently out of money with which to supply the best food for their children, as Portsmouth did last summer, there is always an immediate and decided increase in the incidence of diarrheal diseases.

The exciting causes of diarrheal diseases will be discussed with each type. It suffices to say here that these predisposing causes, such as heat and poor food supply, may be the actual exciting causes.

For a classification of diarrheal diseases, I shall take that of the eastern schools in preference to the classical one of Finkelstein and his followers. It is my feeling that the varieties of diarrhea are intimately related from the standpoint of pathology as well as symptomatology, "There being in all," to quote Griffith, "a functional disturbance, and in the more severe forms an organic change as well; or the latter developing in the later stages of a diarrhea which was at first only functional in nature." This authority also calls attention to the increase in bacteria content of stools in diarrheas, so that it is often impossible to determine whether the diarrhea is the direct result of the infectious influence of the germs on the mucous membrane or of their action in causing decomposition of the food and the consequent formation of toxic products; or whether the increase of germs is secondary to a simple disturbance of function, of which the diarrhea is a symptom.

Let us consider the latter case first. The generally accepted term for this condition is Acute Intestinal Indigestion. Under this heading is grouped all the milder disorders where the disturbance is purely a functional one, produced in a number of ways, with very little evidence of toxic disturbance in the individual.

Etiology: The principal cause of this condition in infants is overloading of the gastro-intestinal tract; the use of a diet unsuited to the patient with an excess of protein, carbohydrate or fat; the secretion of abnormal constituents in the milk of the nursing mother from nervous or other causes; and poor digestive power of the infant because of rickets, acute infections, etc. Summer heat seems to act here as an exciting cause, especially in artificially-fed babies. Under this grouping occurs the acute upsets seen in older children from the ingestion of unripe fruit or indigestible vegetables. Here also come the so-called anaphylactic diarrheas that occur always in certain children from the ingestion of certain articles of food for which they have become sensitized. The number of bacteria in the ingested milk is relatively unimportant save for their effect in producing harmful decomposition products in the milk.

Pathology: There are no lesions in the bowel except a slight injection of the mucous membrane. There is, of course, outpouring of fluid and increased peristalsis, resulting in diarrhea.

Symptoms: The onset is usually with vomiting and in a short while fever, abdominal pain, slight prostration, and early diarrhea: although all other symptoms may be absent save for slight malaise and diarrhea. The stools in infants contain lumpy masses of undigested milk in a watery fluid, some-

time with mucus, but never blood, the color varying from light yellow to green. The number may be increased up to 20 in 24 hours, and a stool almost always occurs with the taking of food or fluid. This is the characteristic of the stool in older children, too, and frequently the particular offending article in the diet may be recognized in the stool.

Under proper treatment, the attack usually clears up in a few days, although it may go on into the next form to be considered—Acute Gastro-enteric Intoxication, the latter being simply a more severe and more toxic form of the same disturbance.

Etiology: The same predisposing causes are important factors. The actual exciting cause of the disease seems to be the effect of toxins, produced either endogenously or exogenously, and frequently from the action of bacteria on milk. This is the explanation of the occurrence of the disease in infants fed on sterilized milk. The sterilization destroys the bacteria but not the toxins already formed in the milk. In other cases bacteria foreign to the intestinal canal are found in great number in the stools, while in still others it seems probable that those normally present are abnormally increased in number and virulence. The distinguishing feature is that, while the upset may be due to the action of bacteria, it is not an actual infection of the intestinal wall, but the effect of the products formed in the canal by bacterial action. Some effort has been made to differentiate the forms of this upset according to the particular food element attacked, but to my mind this complicates the problem without aiding much in the study of it. I mention it only to bring out the fact that it is usually the lower fatty acids acting as irritants, and these, of course, are derived from the sugar and fat in the foods. A number of micro-organisms have been accused as active agents—streptococcus enteritis, bacillus dysenteriae, bacillus proteus vulgaris, and bacillus perfringens of Tissier. It is certain that no one of them is ever specific, and that no one of them, even in ileo-colitis, can produce a definite, characteristic complex of symptoms.

Pathology: The change in the stomach and intestine ranges from a very slight one to severe desquamation, according to severity of the upset. All changes are of a degenerative nature, and involve the stomach and small bowel more than the colon. Both the stomach and bowel are usually distended with gas, the mucous membrane covered with mucus, the epithelial cells pale and showing microscopically evidences of degeneration with, in the more severe cases, desquamation in patches and ulcer formation. The Peyer's patches are injected and show small-cell infiltration. Other organs in the body may show the effect of toxins, such as fatty degeneration in the liver and acute degenerative changes in the kidneys.

Symptoms: For a discussion of the symptoms it seems best to divide the subject into (1) a mild and (2) a severe form.

1. *The Mild Form*: There are usually present in infants both gastric and intestinal symptoms. The onset may be gradual, following evidences of indigestion; or sudden, with fever, combined with colic and vomiting, with diarrhea coming on in a few hours. Nervous symptoms usually appear early, as restlessness and irritability, or frequently convulsions. There may be great prostration, sunken eyes and stupor. There is loss of appetite, but always great thirst, which may cause the child to take everything offered, even though it be quickly vomited. The vomiting may be moderate and soon cease, may be entirely absent, or may be severe and very persistent. The diarrheal movements are at first fecal, with curdy masses, and may be very frequent. They later become quite liquid, with a very offensive odor, and are expelled with a lot of gas, and accompanied by colicky pains. Usually in the mild form the fever subsides with the development of diarrhea, and there is improvement in the nervous symptoms. Such a case, properly treated, gets over the gastric symptoms in 24 hours and, within 3 or 4 days, all symptoms may have disappeared save for a slight increase still in the number of stools to 3 or 4 daily. Even then an error in dieting will throw the case back quickly into the condition just described, or into the severe form. On the other hand, a case may persist as described, for several days, and gradually pass into the severe form, without ever showing any improvement.

2. *The Severe Form*: If a case develops the severe form quickly, the clinical picture is a definite one.. There is an onset exactly as described, except that nervous symptoms are more prominent. The infant looks more

toxic, vomiting is almost continuous, and a diarrhea with large watery stools more quickly appears. Very quickly the patient shows signs of loss of fluid from the body tissues, and very quickly there is evidence of acidosis. Unconsciousness with stupor or convulsions prevails. The eyes are sunken, the conjunctiva dry and pale. The skin is dry and glossy, and remains in folds over the abdomen, if picked up between the fingers. There is a peculiar high-pitched "cerebral" cry which is almost continuous, with tossing of the head, arms and legs. And in typical cases there may be an "air-hunger" breathing which is of diagnostic aid. This form is the "Alimentary Intoxication," in Finkelstein's classification, and is the form that appears typically in cases from the ingestion of milk that is high in toxins from bacterial action. The severity of the symptoms and the fatal termination have in later years been thought to be due to the high degree of acidosis present. One cannot overestimate the importance of recognizing early the presence of the dehydration and acidosis, so that proper treatment may be instituted. A great aid in the diagnosis of acidosis is the apparatus familiar to you, for estimating the carbon dioxid tension of the alveolar air. Some modifications in its use are necessary in dealing with infants. A smaller bag is necessary, and it must be fitted up with a mask that can be firmly applied over the baby's face. The successful use of the apparatus in babies depends upon its proper application over the face, and thorough emptying and refilling of the bag by the patient's respirations. Its construction is simple and its operation can be quickly and accurately carried out, with a little experience. To one not thoroughly familiar with the signs of acidosis in infants, it is a distinct aid in diagnosis. This severe form of gastro-enteric intoxication usually terminates in death in 3 or 4 days, unless the symptoms are relieved by treatment. Before leaving its consideration, it is necessary to mention one more form, that generally given the term, Cholera Infantum. The onset of this form is even more rapid, the toxaemia (for which term we should probably substitute the two terms dehydration and acidosis) most profound, and the cases usually end in death in 24 to 48 hours from the onset.

I would mention also briefly the complications of acute gastro-enteric intoxication. These are usually seen more in the mild form of the disease, as in the others the course is so rapid that there is hardly time for complications to arise. Broncho-pneumonia is fairly commonly seen. Also, otitis, urticaria and erythema are sometimes seen in infants, though more frequently in older children. We presume that they are due to the passage of foreign protein through the injured gastro-intestinal mucosa into the blood-stream. Furunculosis and multiple abscesses may occur. And a complication not infrequently seen in cases that have acidosis is a condition of tetany, the explanation being concerned with the effects of over-breathing as well as the disturbance in calcium retention.

Finally, a case may go on into the next type of diarrheal disease to be considered, that of Acute Ileo-colitis, or acute infectious diarrhea. We would group here all cases in which "The element of inflammation of the bowel wall is predominatingly present."

Etiology: The same predisposing factors previously referred to prevail here. The conditions of poor hygiene, poverty, uncleanliness and crowding are especially important factors. Likewise, failure to treat early and properly the milder disorders accounts for the great frequency of the condition among the poorer class of people. It is, however, a distinctly infectious disease, and the infective organisms may be any or all of those previously mentioned. It is only necessary to add that only one organism is capable of producing the disease primarily, the dysentery bacillus. When the disease is due to the other ones, they are acting as secondary invaders of the bowel wall.

Pathology: As already stated, the primary character of the disease is an inflammation. The lesions vary greatly in location and intensity, according to the duration and severity of the attack. The usual case shows one of three forms of lesions. (1) The acute catarrhal form, in which the mucous membrane is congested and swollen and the epithelium loosened in places. Small hemorrhages are seen on the surface of the mucous membrane with more or less extensive erosions. There is small-cell infiltration of the bowel wall, sometimes even to the muscle layer. (2) Follicular ileo-colitis, in which there is deep ulceration of the soli-

tary follicles, which extends laterally and into the bowel wall, with sometimes induration of the muscle coat. (3) Membranous ileo-colitis, in which there is a thickening, induration, and fusion of whole sections of the bowel wall, over which there is no mucous membrane. These lesions are always low down in the intestinal canal, usually in the colon. If membranous deposits become detached, there is seen deep ulceration of the bowel wall. There are also lesions in other organs, such as swelling of the mesenteric glands, broncho-pneumonia, degenerative changes in the liver, in the kidneys and in the spleen.

Symptoms: No division into types according to etiology or involved pathology is possible. One may describe a mild case and a severe case, as in the former disease. The average mild case may develop after 3 or 4 days of intestinal intoxication when the bacteria finally invade the bowel wall, when the principal symptom will be the appearance of blood and pus in the stool, and more marked tensemus and colic with its passage. Or the onset may be sudden, when it simulates in every way those symptoms already discussed, for the first few hours. Then the stools become smaller and more frequent, there is more tenesmus and colic, and pus and blood appear. The abdomen becomes distended and tender along the large bowel. There is decided prostration and rapid loss of weight. But after 2 or 3 days the temperature subsides, the stools become larger, contain more fecal matter and less blood, and after about ten days are practically normal.

The severe cases are characterized by more frequent stools that contain only mucus and blood, and by a rapid toxaemia manifested exactly as in the intestinal intoxication. The temperature tends to be higher and to remain so, prostration and loss of weight continue, and death takes place in from 2 or 3 days to 1 or 2 weeks. Or a somewhat milder inlection may make some improvement, hold it for 3 or 4 weeks and finally get worse as ulceration spreads in the bowel, or die of some disease.

Improvement in such cases is always a sign that the ulceration has not been extensive. Recovery is very slow and tedious, and relapses are quite prone to occur. The complications likely to occur are practically the same as those given in the fermentative diseases. In addition must be mentioned the probability of the development of a chronic ileo-colitis or of a case of persistent malnutrition.

Summary.

1. My part of the discussion of diarrheal diseases of infancy has been concerned with an effort at classification according to etiology, pathology and symptomatology, and an effort to stress the importance of such classification.

2. General etiological factors common to all diarrheal diseases in infancy are age, season, improper feeding, uncleanliness and crowding, and previous debilitating diseases.

3. The most mild type of diarrheal disease is acute intestinal indigestion, a purely functional disturbance, most often the result of over-feeding, characterized by short duration, slight fever, and a serous diarrhea with very little or no mucus in the stool.

4. The next type in severity is acute gastro-intestinal intoxication, with fermentation and degenerative changes in the bowel wall, but without infection; a disturbance that is both functional and organic, due to endogenous or exogenous toxins, divided as to symptoms into a mild and an acute form, according to the absence or presence of toxic symptoms due to the conditions of debydration and acidosis; differentiated from indigestion by presence of fermentation, nervous symptoms, and longer duration; severe form characterized by development of debydration and acidosis, which are grave conditions, demanding early recognition and treatment.

5. The final type is acute ileo-colitis, the group in which the elements of inflammation and infection predominate; the infecting organisms being the usual bacterial flora, but especially also the streptococcus and dysentery bacillus; the lesions being both degenerative and proliferative, with degenerative changes also in liver, spleen, and kidneys; characterized by symptoms that result from inflammation and infection, such as continued fever, rapid and prolonged loss of weight, marked tenesmus and colicky pains, and blood and pus in the stools; and with a course that may be short with improvement, or short with a fatal termination, or long drawn-out with continued fever and complicated by relapses, usually with severe toxic symptoms and very high mortality,—the type that the lay people call "Summer Complaint" and fear dreadfully.

Professional Building.

THE MANAGEMENT OF CONVERGENT STRABISMUS.*

By V. M. HICKS, M. D., Raleigh, N. C.

Time will not permit a discussion of all types of strabismus; therefore the writer has decided to concentrate on comitant or concomitant strabismus, as this is the usual type we see in practice.

Very few of us consider the serious handicap that strabismus places on a child. It plays a great part in moulding the disposition. The children soon become quite sensitive, due to the unjust mocking on the part of their playmates. There is no question about its having an effect on the mental development in a large percentage of cases. In this age when rivalry is so keen, the deformity causes a handicap that can scarcely be overcome. Therefore, if the child is to be given a fair chance, this deformity should be corrected early. We must impress upon the parents that they are the responsible parties and the child can justly hold this against them in later years. Why should they allow their fears of having the child hurt prevent them from giving it an equal chance with its playmates? They must remember that although they can overlook the deformity, others do not and will not.

Comitant strabismus is largely due to the following: High or unequal refractive errors, excessive accommodation causing excessive convergence, congenital muscle weakness or poor innervation, insertional anomalies and faulty fusion. A review of the literature on this subject shows that a great difference of opinion exists. Duane stresses the importance of excessive convergence incident to the over-activity of accommodation in overcoming refractive errors. This, no doubt, plays a great part. Davis and Wilkinson believe that faulty fusion is the chief factor, pointing out that comitant squint is a binocular rather than a monocular affection. Green stresses muscular anomalies and offers good argument in favor of this view. The many differences would lead us to believe that all are correct in certain cases, and none in all, and that each case should be studied with the idea of arriving at the pathology existing in each case.

The point upon which we are all agreed is that it is of primary importance to see the cases very early, just as soon as it is observed that a squint has developed. The public must be impressed with the importance of early examination and treatment. Most laymen and a surprisingly large number of physicians believe that squints are often overcome and they should wait until puberty before consulting the oculist. It is commonly taught that strabismus results from such petty things as a bee sting of the lid, nervousness, scares, foreign bodies striking the eye and many ridiculous reasons. These and other fallacies should be disproved and parents should be taught that if anything is to be accomplished in non-operative treatment it must be begun very early. Cures from non-operative treatment rarely occur after the age of eight.

It is important for oculists to have some definite method of procedure. I recommend that the following routine be adopted by those of us who do not have a systematic way of examining and treating these cases:

1. The history is of no little importance. If the strabismus has existed since birth, we may be sure it is due to a paralysis or paresis of the external rectus. In these cases, however, it is not uncommon to see evidences of some intra-cranial involvement, which has caused the paresis. We should also note if the deviation followed one of the acute exanthemata or any debilitating disease. If this be true, then we would believe that it is due to a paresis or that it has occurred in an eye that would have carried the error of refraction perfectly well, but for the temporary weakness of accommodation caused by the toxemia. Certainly, fusion plays no part in this type of case, which should yield to non-operative treatment. We wish to know if the squint is unilateral or alternating, constant or intermittent. If intermittent, it is likely due to a spasm of the inferior oblique. We should know if there are any cases of strabismus in the family. Strabismus is, of course, not inherited, but some of its causes are especially high and unequal refractive errors.

2. The vision should next be taken as accurately as possible. Many methods have been devised for taking the vision of children. The picture card is probably best adapted to most cases. If no amblyopia exists, we know we are dealing with an alternating strabismus or one that has developed very recently. If the vision is less than 20/200 or 1/10, very little hope can be given for relieving the poor sight. If it is secondary to the strabismus, it can be

*Read at the meeting of the Medical Society of the State of North Carolina at Winston-Salem, April, 1922.

largely overcome as in the cases reported by Johnson, in which the good eyes of adults were destroyed by accident and the amblyopic eyes rapidly developed normal vision. However, we should impress upon our patients that as long as the eye is turned it is not being used. The only hope of improving the sight in a squinting eye is to exercise the visual function. Straightening the eye tends to do this. If nothing is done, the vision will gradually grow worse, just as an arm will wither if constantly kept in a splint. It is the old principle of atrophy from disuse.

3. The muscle should next be examined. Carry the eyes into the six cardinal positions and with the screen test determine if there is any lagging of a muscle or if any muscle is over-active. Weeks advises the use of the tropometer to determine the lateral movements and thinks this is an excellent way to decide the operative procedure. The perimeter can be used with fair accuracy. Prisms may be used. With a little practise one can measure the deviation fairly accurately by having the patient look straight ahead with the good eye screened and after removing the screen note the amount the eye rotates. In this connection Duane points out that spasm of the inferior oblique often produces convergent strabismus. This spasm is generally produced by a paresis of the superior rectus of the other eye. Carefully watch the squinting eye turn in. If it has a tendency to turn up and in, the inferior oblique must be in spasm. In operating with this condition present, one must be guided by the amount of spasm. If it is marked, a tenotomy of the inferior oblique should precede the regular operative procedure; if the spasm is slight, the tenotomy of the internal rectus, which should be confined to the upper fibers of that muscle.

4. Next in order should be an examination of the media and fundus. Opacification in the cornea, lens or at any point along the visual axis may produce strabismus. Congenital, fundus defects play a similar role. The refraction of the unaffected eye generally determines whether the eye turns in or out. The examination of the media and fundus should be repeated when the pupils have been dilated.

5. Cycloplegic refraction should always be done; a manifest refraction is generally lost time. Atropine should be used for three or four days and the patient returned for the second examination. At this examination two very important things are determined:

(a) The full refractive error.

(b) Whether or not the strabismus has decreased, with the accommodation paralyzed. Retinoscopy gives us the error fairly accurately and should always be used.

This completes our investigation of the case and we should now be prepared to advise treatment and discuss the prognosis. If the vision is fair, the patient young, and the deviation decreased by the cycloplegic, the prognosis should be favorable with non-operative treatment. If the strabismus has not decreased, very little hope can be entertained for non-operative treatment.

In the vast majority of cases, regardless of how useless non-operative treatment may seem, we should try it. This correction with glasses, of course, is for both eyes, as it takes the accommodative strain from the unaffected eye and tends to decrease the amblyopia in the convergent eye. In prescribing these glasses, some oculists only partially correct the error, but it is generally believed that full correction to within one-fourth diopter yields the best results. Weber advises the further use of wafers (two to three diopters) for the near work to completely put at rest the accommodation and thus minimize the stimulation to converge. In addition to glasses, we should instruct our patients in the use of shades for the unaffected eye. Atropine should be used in the good eye, but not over a longer period than two weeks at one time. The shade should be alternated with the atropine. We should advise against the use of atropine for both eyes except for diagnostic purposes, as this would tend to produce amblyopia in both eyes. Aside from the use of glasses, atropine and shades, many methods have been devised to treat the amblyopia and promote fusion. Such instruments as amblyoscopes, stereoscopes, and the like. I have little faith in these instruments. I have never gotten results from them and I find that many of our best authorities have abandoned their use.

When shall we operate? Green's investigations into the methods employed by a large number of oculists show a wide difference of opinion. I believe there should be no age limit. Generally speaking, operations can be postponed until the age of four, the exception being in a definite uncomplicated congenital paresis. Soon after the age of four, depend-

ing on the individual, the operation can be done under local anesthesia. General anesthesia should be avoided as much as possible, because we cannot judge our results with the patient asleep. Full thirty minutes should be given to cocainizing the eye, dropping in one drop of a four per cent solution every five minutes. Just before the operation is begun, a few minims of a one-fourth per cent of cocaine, with a drop of adrenalin, are injected under the conjunctiva, over the muscle to be operated. This should be repeated when the tenotomy is done. With this anesthesia very little pain is produced. We must remember that pulling on the muscle produces considerable discomfort and this can be avoided to a large extent. As to the type of operation, many are used. The advancement was one of the first. Muller declares it to be imperfect and that it has no analogue in surgery. The advanced muscle adheres to the original insertion. The sclera is injured by the needles, and I have seen one case of atrophy of the globe following this operation. In the final result, a lump of tissue remains under the conjunctiva and the unsightly "bridle" too often occurs from shortening of the conjunctiva. These latter objections apply also to the more recently devised tucking operations. A perfect cosmetic effect is desired in all cases and I therefore employ a modified resection of the external rectus with an open partial tenotomy of the internal rectus. The external rectus is resected after the method of Reese, except the facia over the muscle is left. This will prevent the suture from splitting through the muscle. Some surgeons worry over the amount of muscle to be resected. I have never seen a permanent over-correction from a resection alone, but I have seen a few corrections by it without the tenotomy. To my mind, the tenotomy is the most important part of the surgical procedure. The pathology existing is a weak muscle on one side and a strong over-acting muscle on the other. Our problem is to strengthen the weak muscle as much as possible and to weaken the over-acting muscle as little as is necessary to straighten the eye. The older surgeons elected a free complete tenotomy, generally cutting the structures from the superior to the inferior rectus. This was simple and produced a quick result. But a large percentage of these cases developed a secondary divergent strabismus. In addition, there was a sinking of the caruncle producing a staring glassy eye. In my opinion it is poor surgery to ever do a complete tenotomy of the internal rectus except in certain adult cases, due to the part this muscle plays in convergence. A complete tenotomy of the external rectus may readily be done without fear of unfavorable results. In tenotomizing the internal rectus, the caruncle should be well dissected up and a few fibers left intact. As has already been stated, if the inferior oblique is spasmodic, all the upper fibers should be cut. The plan generally followed is to leave a few fibers above and below, cutting the central ones. If an open tenotomy is done, the remaining fibers can almost be counted. The amount of tenotomy should be determined by the result the surgeon is getting. Have the patient sit up and fix an object. If the eye is straight, no further tenotomy should be done. For alternating strabismus, both external recti should be resected and a tenotomy done on the eye that tends to converge after resections. This is usually sufficient but a tenotomy of the remaining internus may be done if necessary. Diplopia sometimes develops after the operation. This is of little moment and the patient overcomes the double vision by fusion or exclusion of the false image in a short while. If after the operation there is a tendency to over-correction, glasses should not be given for a while. If there is a tendency to under-correction, atropine and full correction should be prescribed to put at rest the accommodation and convergence.

Laymen get some very erroneous ideas about the operative procedure, so we should explain it in detail. I have seen people who express the idea that the eye is taken out and turned around. Others believe the eye is "split open." It should be explained that it is not the eyeball but the muscles attached to it to which the operation is confined. We should further explain that this operation upon adults should give a perfect cosmetic result, but does little to improve the sight.

Conclusions.

1. Lay-people should be taught that strabismus: can be cured; that children do not overcome strabismus; that if anything is to be done in the way of non-operative treatment it must be done early; that operations for the correction of the defect are nothing horrible.

2. A definite method of examination enables us to know what to do and when to change our tactics.

3. There is no age limit for operative treatment. The time to operate is when non-operative treatment has failed.

4. Resections of the external rectus with an open partial tenotomy of the internal rectus is the safest operation and yields the best cosmetic results.

DENTISTRY FROM THE VIEW-POINT OF THE NEUROLOGIST.*

By JAS. K. HALL, M. D., Richmond, Virginia.

The mouth and its adnexa have engaged the serious attention of the moralist from the beginning of recorded history. By the inspired writer the opinion has been handed down to us that the labour of a man is for his mouth, and from the same source have we the statement that a fool's mouth is his destruction. Ages ago it was known that the lips of the wise dispense knowledge, and we are told that death and life are in the power of the tongue. What a wonderful organ the mouth is! How influential has it been—although one of the smallest organs of the body—on the course of human history! From it proceedeth both blessing and cursing. Out of the heart the mouth speaketh, and we are judged and estimated and given our place in society much in accordance with the use that we make of this small cavity.

It is not to be wondered at that observant man thought much about the mouth, and that literature abounds with epigrammatic sayings that relate to this portion of the body. What varied functions it performs! What a multiplicity of duties engage it! How unceasing it is in its activities! Though the physiologist tells us it should not be so, we know that most of the oxygen that keeps the fires forever burning in our bodily furnaces finds its entrance into the system through this opening; the same cavity serves, also, as an important part of the expiratory-excretory apparatus; in it the seat of taste has its habitation, and there pleasant food makes its first happy contact with the body; by means of this cavity, so ready always for instant use, mankind is enabled to vocalize his thought and to transmit by winged words his ideas to his fellowman.

Even the lips portray the emotional state. Drawn down at the corners in contempt, elevated in derision, or parted in a smile, they need no accompanying words to proclaim to the world the state of one's feelings.

References to the teeth are not so abundant either in sacred or in profane literature as are the references to the moveable appendages of the mouth. The importance of good teeth was apparently recognized by the early Biblical writers. Sound teeth were regarded not only as accompaniments of a sound physical condition, but their decorative value was also appreciated. In one of his songs Solomon sang: "Thy teeth are as a flock of sheep which go up from the washing, whereof every one beareth twins, and there is not one barren among them." What a wonderful thing it would be for the beauty and the health of our people if it could be said of their teeth that they are as white as washed wool!

I am unfamiliar with references in the early history of the human race even to the existence of bad teeth. One might infer that the ancient Hebrews knew nothing about decaying teeth. But people of all kinds and in all times have apparently associated good, sound teeth with health and strength and beauty and virility. The mighty animals of the lower orders are provided with powerful teeth: with the toothless states of the individual—infancy and extreme age—we unconsciously associate helplessness in mind and in body.

Until comparatively recent years it would seem that the dentist has thought of a tooth as affording a grinding surface and as adding a touch of beauty to its possessor—especially if it were a front tooth. Not the dentist alone, but even the ignorant layman, has long known that every tooth in one's head had in it somewhere at all times, latent fortunately most of the time, but potential always, about the most infernal pain mankind has ever known. But almost until yesterday neither the medical man nor the dentist has been able to look upon the tooth as an integral organic part of the body. The tooth, if it provoked trouble, was not permitted to remain in the body.

What has happened in these latter years to dignify the mouth, yea even one tooth, with so much medical and dental attention and thought? Let us see. It has long been known that certain types of malignant degeneration were peculiarly prone to attack those portions of the body in most active use. Cancer is looked for upon the lips, the tongue, in the

*Read before the Richmond Dental Society, Richmond, Va., June 1, 1922.

stomach, throughout the remainder of the alimentary tube, and in certain portions of the genital apparatus. The tendency of malignancy to appear in such tissues has long been known. Certain theories—the irritation theory, for instance—make plausible the outburst of malignant degeneration in such situations. Partly for this reason, perhaps, it has been difficult for us to think of fatal infection as lurking in a quiet, inactive, unused portion of the body. But the progress of modern medicine is measured in large degree by the attention that has been given in recent years to focal infection. Much of this infection has had its habitation in unsuspected localities—in quiet places, in functionless tissues, in useless organs or appendages;—in such places as the sinuses of the head, in the tonsils, in the gall-bladder, and in the appendix, and perhaps in pockets along the lower alimentary canal. How much medical thought now-a-days is centered upon these quiet places in an effort to discover hidden assassins of health and of life itself!

Only yesterday, it would seem, has it been possible for medical men, dentists or physicians, to think of serious infection as having lodgment in or about a tooth. Intimation of such a possibility by even so great a man as Benjamin Rush made no lasting impression upon physicians and dentists. He lived during our own Revolutionary period, and in that distant day he claimed to have cured completely a painful rheumatic hip-joint affection by the extraction of one diseased molar, but the medical value of his suggestion was evidently lost.

Irritability, or responsiveness to a stimulus, is one of the inherent properties of living matter. Sometimes the response is pleasant, almost as often perhaps, it is unpleasant. But the reaction is there, whether it be hidden or whether it be manifest, whether the tissue be bone, or muscle, or cabbage, or skin, or grass, or a neuron. If a portion of the active principle of a vegetable substance—hyoscyamus, for instance—weighing only the one-hundredth part of a grain of wheat, be sufficient to lull to sleep the nervous mechanism of a powerful man wild in mania; if one-half a grain of another powder—morphia—be sufficient either when placed in the alimentary tube or lodged under the skin, to relieve through its effect on the central nervous system the torture of a kidney colic, why, then, is it difficult to believe that the potency of a distillation set up by tetanic bacilli in a nail-puncture in the bottom of the foot is sufficient to clamp the jaws in rigid closure and to lock the muscles of respiration in fatal immovability?

Ten years ago, perhaps, a man came to me in the grip of chronic alcoholism. Life had become unsatisfactory, void and empty of any pleasure, so he said, and daily a pint of whiskey kept him benumbed to the point that he could endure living. Poor dentist that I was, it was not difficult even for me to discover that every tooth in his head was floating in wobbly fashion in a sea of pus. I could not induce him to go to a dentist, and soon after his return home he invited a bullet to make a fatal pathway through his brain. I have no doubt that long-standing oral sepsis drove him first to drink and later to terminate his life. Just before our entrance into the great war, a young man came from a distant state seeking relief from morphine addiction. A nagging, persistent facial neuralgia had driven him to the use of the drug. A member of your profession located a malplaced unerupted wisdom tooth; extracted it; the young man regained his health; joined the colors, and did his part in helping to drive the German army back to its final home. Under my care at present is a young man barely out of school, who is brought down frequently in epileptiform seizures. Just before the first attack laid hold of him an upper molar, capped with pus, was removed, but the infection had already invaded the antrum, and the urine was also pus-laden—and it still is—and the seizures persist. Little is known about so-called epilepsy, but the conclusion is hard to escape that a long-concealed abscess at the root of one tooth has had much to do in making possible this young man's present unhappy state of health.

The mental and the nervous disorders directly attributable to infection—much of it hidden for years in the mouth—are in numbers almost like the sands of the sea shore. I think of the manias and the comatose conditions associated with kidney disease, much of which must ultimately spring from a focus of infection in the mouth and about the teeth. And I think, too, of migrain; the various neuralgias; neuritis of various types, but almost always of toxic origin; sciatica, headache; the spinal cord changes in pernicious anaemia; prob-

ably those also in multiple sclerosis. And I think, too, of certain types of meningitis as springing from a concealed focus of infection—a focus found not infrequently in the mouth and sometimes about the teeth. We must remember that oral sepsis—peridental infection often—may serve as the real point of origin of appendicitis, gall-bladder infection, joint involvement, kidney inflammation, and, indeed, as liberating the toxic substance to which there may be reaction in any portion of the body. We must remember, too, that, regardless of its nature, cause, or location, infection makes itself felt almost always in the nervous system, and some type of neurological or mental reaction is almost always a concomitant of infection. What is toothache, pray, if not a neuritis of the terminals of certain sensory nerves?

Confession must be made, of course, that the mouth is the most unsanitary portion of the human body. Especially through the medium of food, drink, the fingers, and other foreign bodies, the mouth comes into intimate contact with a large part of the world. It must be filled always with germs of various kinds. Is it to be wondered at that many of these organisms find their way down through decaying teeth and down around good teeth, into a quiet resting place, where they can multiply and distil their poisons without fear of molestation?

The dentist, as in the olden days, is no longer a special sort of mechanic. He has become a professional man—a medical man, indeed, whose work is confined largely within the mouth,—but the scope of whose knowledge must embrace the anatomy and the physiology of the entire body. The importance and the dignity and the necessity of dental examinations and dental work are making the medical man more and more attentive to conditions within the mouth, and the far-reaching effects of dental neglect are making the dentist more and more a physician. Let it so be.

Neither destruction nor removal of an organ—even a tooth—is the highest aim of medicine. Health implies the harmonious functioning of all the component units of the body. And it is the duty of the dentist and the physician to combine their skill in an effort to obtain from the gods for each individual a favorable response to the ancient prayer of Juvenal—A sound mind in a sound body.

Westbrook Sanatorium.

REPORT OF TWO CASES OF SYPHILIS OF THE EIGHTH NERVE AND INNER EAR.*

By E. G. GILL, M. D., Roanoke, Va.

Case No. 1.—Patient J. B., age 27, came in to see me February 21, 1921, and gave the following history:

"The sixth of ten children born to my parents. Two sisters died in infancy. One brother died, age 21 years, of heart trouble. One brother died, age 29 years, of influenza. My father died of heart trouble at 69 years of age. My mother, sister and remaining brothers are living and well. I started to school when 6 years old and in about two years my eyes began to give me trouble. My father brought me to Roanoke to an eye specialist. He said my trouble was iritis. My next trouble was in 1911, when I was 18 years old. My left eye became inflamed and after a couple of months, during which time I did not see a doctor, the sight became affected. Finally, in the fall of 1911, I went to another specialist. He treated me for some two or three months, during which time my sight became very bad in both eyes. About January, 1912, he told me I had syphilis and, knowing that I had not acquired it and not knowing that I could inherit it, I became insulted and left the specialist. At that time may sight was about gone and I could not walk across a street without being led. So, on February 15, 1912, my brother took me to Richmond and placed me under the care of an eye specialist. He treated my eyes and gave me medicine, but did not say I had syphilis. In about three weeks, my sight began to get better and, during the summer of 1912, I made several trips, alone, to Richmond for treatment. My treatments were concluded in the fall of 1912. My sight is now about as when he finished with me. I can see very well with my left eye but cannot see this writing with my right eye. Then, in 1913, my hearing began to get bad, so I went to another specialist. He treated me by blowing air into my ears, without any results. He finally convinced me that I had syphilis, so in that year I began taking "606" treatments. I cannot say how many "606" treatments I have had since then, but it is around about twenty-five. I know of more than twenty, but don't think it was as many as thirty. Finally, in two or three years, during which time my

*Read at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology in Roanoke, April 13, 1922.

hearing had become very bad, I was persuaded to go back to the specialist at whom I had gotten insulted. So he treated me once or twice each week by blowing air into my ears but my hearing continued to get worse. (For three or four years I have not heard any one talking). In February, 1918, I went to Hot Springs, Ark., where I took a full course of the baths, and also had my back rubbed with mercury daily, but my hearing did not improve. I continued going to the specialist, although without any results. I also continued the "606" treatments until in January, 1920, I got my first and only negative report on my blood test. Since then I have not had any more tests nor any more "606." I don't know how my blood would show today, as I have never gotten nerve to have another test. About four years ago I began to have a lot of trouble in my walking. Several doctors diagnosed it as locomotor ataxia. I was treated for it for some time, by a physician and, while it is not eradicated, yet I walk lots better than I did." These are the patient's exact words.

The results of my examination are as follows:

Nose.—Septum deviated to right side.

Throat.—Tonsils enlarged and diseased.

Ears.—Right ear drum membrane slightly retracted, otherwise normal. Left drum normal, Eustachian tubes patent.

Sinuses.—All clear to transillumination.

Functional Examination of Hearing.—All tests negative. Absolute deafness.

Vestibular Examination.—Dizziness. At times.

Staggering. At times.

Romberg. None.

Tinnitus. None.

Deafness. Absolute.

Spontaneous Test.—Nystagmus looking to right. None.

Nystagmus looking to left. None.

Pointing shoulder from above. None.

Pointing shoulder from below. None.

Pointing shoulder from side. None.

Turning Test.—Nystagmus to right. None.

Nystagmus to left. None.

Pointing shoulder from above. None.

Pointing shoulder from below. None.

Caloric Test (*Cold*).—Nystagmus douche, right. None.

Nystagmus douche, left. None.

Pointing right shoulder. None.

Pointing left shoulder. None.

Case No. 2.—Patient G. G., age 26, came in to see me February 5, 1921, and gave the following history:

"For the past seven years has been deaf in right ear. Deafness came on gradually over a period of two months. During this time he was treated by catheter inflation for one month with no results. Last night he became suddenly deaf in his left ear. No family history of deafness."

The results of my examination are as follows:

Ears.—Left ear drum all right. Right ear drum all right.

Tonsils.—Tonsils diseased.

Nose.—Septum slightly deflected to left side.

Sinuses.—All clear to transillumination.

Functional Examination of Hearing.—Negative. Absolute deafness.

Vestibular Examination.—Dizziness. None.

Staggering. None.

Falling. None.

Romberg. None.

Tinnitus. Yes.

Spontaneous Test.—Nystagmus looking to right. None.

Nystagmus looking to left. None.

Pointing shoulder from above. None.

Pointing shoulder from below. None.

Pointing shoulder from side. None.

Turning Test.—Nystagmus to right. None.

Nystagmus to left. None.

Pointing right shoulder from above. None.

Pointing left shoulder from above. None.

Caloric Test (*Cold*).—Nystagmus douche right. None.

Nystagmus douche left. None.

Pointing right shoulder. None.

Pointing left shoulder. None.

In case Number 2, the vision is twenty-thirtieths O. U., four two-hundredths O. D., and twenty-thirtieths O. S. Fundus examination, O. D. Disseminated choroiditis retinitis, involving the maculae. O. S. small areas of chorea retinitis. This picture of a dead auditory apparatus and a failure of any of the semi-circular canals to produce responses shows beyond all doubt that the labyrinth or eighth nerve is destroyed.

Case Number 1, as shown in the history, had a positive Wassermann reaction; case Number 2 had a negative Wassermann and negative spinal fluid. In all cases of suspected syphilis

of the eighth nerve, particularly those with negative Wassermann should have a careful examination of the eye grounds. The eye condition in the second case was a great aid in clarifying the diagnosis.

The history of these cases clearly indicates the extreme importance of a careful functional and vestibular examination of every case of deafness before resorting to any local treatment, as both patients had been treated by various means for middle ear conditions. One point of particular interest in these cases is that they both have lost the function of their labyrinths, yet they maintain almost perfect equilibrium. This is due to compensation on the part of the muscle and sight sense. If any benefit is to be derived from treatment in these cases, the diagnosis must be made early.

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SOME MODERN VIEWS OF CANCERS*

By CHARLES MINOR BLACKFORD, M. D., Staunton, Va.

It is needless to go into the morbid histology or the pathological classification of the malignant tumors before this audience. It will suffice to say that in this paper the word "cancer" will be used to include tumors of the epithelial group, the carcinomata, and those of the connective tissue group, the sarcomata, and that when any statement is made which applies only to some specific tumor, it will be made clear that such is the case.

All of us are familiar with the anatomical features of these mysterious growths, and all of us are familiar with the fact that at the present state of our knowledge, there is but one effective mode of treatment, which is the early and complete removal or destruction of the neoplasm. Of course this implies an early diagnosis of the cancer, but this in turn requires a degree of co-operation on the part of the patient which is rarely found. Almost every surgeon in wide practice can duplicate from his own experience the well known story of the woman who presented herself for treatment with a well developed cancer of the breast, and who, when the surgeon asked her if she had not noticed the tumor in its earlier stages, answered that she had noticed it but was afraid to show it to the surgeon for fear that he would pronounce it cancer! This is the attitude of many sufferers who consider the presence of a malignant tumor as a certain forerunner of death, and who prefer to deceive themselves into the belief that the tumor is harmless until the time for its cure has passed forever.

There are some points in regard to cancer which every physician should keep in mind, and one of the most important of these is the frequency of the affection. According to the latest report of the United States Census Bureau, one death in ten, after the age of forty years, is due to cancer, and this ratio is apparently increasing throughout the world, or, at least, throughout that portion of it from which we can get fairly reliable statistics. During the two and a half years in which the United States was engaged in the recent war, about 80,000 soldiers were killed or died in the service, but during the same period some 180,000 persons died from cancer in this country. By the figures of the United State Census Bureau for 1917, cancer ranks with pneumonia, tuberculosis and the various forms of kidney disease as being second only to heart diseases as a cause of death, and its mortality rate is a little below eighty-five per 100,000 a year, a rate which increases approximately two and one-half per cent per annum.

In spite of the frequency of cancer, the ordinary practising physician is rarely on the look-out for these affections among his patients, and the tumors are apt to get well under way before they are diagnosed. Probably one reason for this apparent negligence is the fact that we know practically nothing of the cause or causes of these malignant growths. So far, microscopic examination of the growths has shed no light on the causes of the two typical cancers. One of these is composed of epithelium cells and the other is made up of connective tissue cells, but there is nothing in either of these tissues which should be fatal or even injurious to the organism. Most of the body is made up of epithelium or connective tissue, and the most important functions are performed by organs composed of both of these kinds of cells. If the cells of which the cancers are composed were in themselves pernicious, no organisms would be able to live but, although these cells are of vital importance while they are functionating properly, they seem to become vicious in the extreme when they go astray and become cancers. So far,

*Read before the Augusta County Medical Association, Inc., on May 3, 1922.

no micro-organism has been found to which the cancers may be attributed. The most careful cultures have remained negative, and the most scrupulous observations on the part of the most skilled pathologists have failed to reveal any specific cause. It is true that a degree of immunity of grafted cancers may be induced in mice by injecting a quantity of homologous living tissue a week or ten days before grafting them with cancer tissue:* this is called induced immunity, and it is also true that a certain number of mice prove resistant when inoculated with a transplantable tumor; a condition known as natural immunity. Both of these forms of immunity seem to depend on a lymphoid infiltration of the tissues around the graft and, later, on a direct invasion of the grafted tumor by the lymphoid elements.

That the immunity so obtained is dependent on the lymphocytes surrounding the grafted cancer tissue was absolutely demonstrated by the fact that, if these lymphocytes be destroyed, the immunity disappears. In the paper quoted above, Murphy says that there was an actual increase in the circulating lymphocytes, accompanied by a hyperplasia of the lymphoid elements, following cancer inoculation into immune animals, and that if this increase be prevented by the destruction of the lymphocytes, the induced immunity is lost. Furthermore, if naturally immune animals have the lymphocytes destroyed, they become susceptible to inoculation. The destruction of the lymphocytes was affected by small repeated doses of the X-ray, and in the course of the experiments along this line it was found that, while small repeated doses or a single large dose of the X-ray would destroy the lymphocytes, a single small exposure to a ray of suitable quality would stimulate them. From these experiments it seems that the X-ray in the hands of an unskilled operator may do as much or more harm than good.

Between the ages of 35 and 45, three times as many American women die from cancer as do American men, and between the ages of 45 and 55 the female mortality is twice that of the male. Generally speaking, the excessive mortality among women is due to cancer of the breast and generative organs.* Among white women cancer is most common in the breast, but among negro women the uterus is the most common site. There is, however, no tissue in the body in which cancer may not arise, and it is a peculiar fact that the cells of which the cancer is composed are always similar to those of the tissue in which it originates. Cancer of the breast, for instance, may be carried by the blood current to some more or less distant part of the body and there set up a metastatic growth, but this growth will be composed of breast cells, apparently normal cells which have "gone wild."†

Since the present state of our knowledge leads us to think that cancers are not caused by micro-organisms, it may be of some use to consider the conditions which are apt to be followed by a cancerous growth. Abnormalities on the skin, such as pigmented moles, have long been recognized as the starting places for melanosarcomata; chronic ulcers, fissures of the skin and constantly irritated burns, whether the burns be caused by heat, X-rays, radium, caustic chemicals, or what not, are apt to be followed by cancerous growths. The natives of Kashmir have the custom of carrying a metal box containing burning charcoal, the so-called "Kangri" basket, under their clothes and next to the skin of the abdomen and, as a result of this constant skin irritation, the "Kangri" cancer is well nigh universal among them. The presence of gall stones which keep up a constant irritation of the gall-bladder, and a certain proportion of ulcers of the stomach, are apt to be followed by cancer. The senile keratoses or patches of heaped up squamous epithelium, so common on the faces and bodies of elderly persons, are among the most frequent starting places of skin cancers and any other condition which results in a chronic irritation of a tissue is liable to be followed by a cancer at the seat of the irritation. Of course, cancer does not invariably follow a chronic irritation, and so there must be some other factor of which we are ignorant; but, unquestionably, chronic irritation is the most common preparatory condition.

Among these sources of chronic irritation

*James B. Murphy. "The Effect of Physical Agents on the Resistance of Mice to Cancer," a paper read before the National Academy of Science on November 10, 1919, and published in the Proceedings of the Academy, January, 1920.

*"Fighting Cancer with Facts." Revised April, 1921, and published by The American Society for the Control of Cancer, 370 Seventh Avenue, New York.

†Lilienthal, Howard. "Lecture No. 1." Published by The American Society for the Control of Cancer, 370 Seventh Avenue, New York.

body lice and intestinal worms must be taken into account. Of recent years we have learned that malaria, yellow fever, the sleeping sickness and a number of other diseases are transmitted by biting parasites whose effect is more or less like that of a dirty hypodermic needle, and this fact has led to the investigation of the influence that such parasites may have in producing cancers in their hosts. Millard C. Marsh,* of the New York State Institute for the Study of Malignant Disease, Buffalo, N. Y., working alone and in conjunction with Dr. G. Wulker, of the Institute for Cancer Research in Heidelberg, made some interesting investigations on the effects of the common mites which infest more or less the skin surface of all adult mice. He found that these mites, which are so small as to require some magnification for their recognition, are sometimes found subcutaneously, although dead and often disintegrated, in tumor mice and in other old mice, though they are rarely so found in young mice. This fact led him to try a series of experiments to determine if these mites are the bearers of some agent which causes the tumors, or if they are merely the instrument of injuries which act as stimuli. More than 1,100 mice were used in over sixty experiments in irritation and trauma, and most of the experiments were negative, but the general result seems to eliminate the introduction of any pathogenic micro-organism and to point to traumatism as the cause of the tumors, though, as Marsh says, "Incidentally, one may further infer that the effective factor hidden in any mechanical procedure which appears to start tumors is a very subtile one, and that its isolation or identification is a very difficult task."

Unhappily, our ignorance of the cause of cancer is matched by our ignorance of the manner in which it produces its deleterious results. As stated above, a cancer appears to be a mass of normal cells which have "gone wild" or are developing in a "lawless" manner, but language of this sort is purely figurative and does not express any accurate or scientific condition. From the fact that some animals seem to be immune to grafted cancers while others are very susceptible to them, some anti-cancerous agency must exist in the organism, but so far as is at present known, this resistance is associated absolutely with the accumulation of lymphyocytes about the spot where the cancer grafts are made. There seems to be nothing parallel to the action of the ordinary anti-toxines which are so efficient in the ordinary bacterial diseases. Cancer is not self-limiting; it does not run a course and stop. It does not, therefore, develop any anti-body. The rapid growth of the neoplasm makes a serious drain on the nutrition of the body, and the degeneration to which the tumor tissues are liable is apt to furnish toxines of great virulence which poison the patient. These degenerative processes lead to the disintegration of the original tumor and masses of the tumor cells are carried to some other part of the body, where they set up metastatic growths. It has been suggested that the cancers, and especially the epitheliomata, may act as glands and secrete some product which is deleterious to the body as a whole but, as yet, this suggestion has not been supported by chemical or other evidence.

It is evident that with the limited knowledge as yet gained about the cancers, the only hope of a cure is the total removal or destruction of the malignant growth. If a cancer can be diagnosed in its earlier stages and is so located as to be operable, it can be cured by ordinary surgical procedure, provided that the morbid tissue be thoroughly removed, but in the latter stages of its growth or if it be inoperable, some other means must be sought. Caustic pastes by which the morbid tissue was to be destroyed by chemical action were at one time in great favor, and these pastes, mostly with some preparation of arsenic as the active agent, are still the mainstay of most of the quack "cancer cures." The beneficial value of these agents is less than doubtful while their injurious effects are evident, not only by inducing the patient to postpone treatment which might be useful, but by producing an irritation which is apt to stimulate the morbid growth. Burning out the cancer with the actual cautery has fallen into almost total disuse.

As soon as the X-ray and the peculiar properties of radium were discovered, they were employed on cancers. The effect of the X-rays has been the subject of extensive investigation in the laboratories of the Rockefeller Institute, for very early in the history of these agencies the theory that cancer tissue in gen-

*Marsh, M. C. Trauma and Primary Mouse Tumors. The Journal of Cancer Research Volume II, No. 3, July, 1917.
Marsh, M. C. and Wulker, Dr. G. Ueber das Vorkommen von Nematoden und Milben in Normalen und Spontantumormausen. Zeitschrift fur Krebsforschung. Berlin, August, 1916.

eral is more susceptible to injury by the X-rays than is normal tissue, became widely accepted "So far as we have been able to determine from the literature there have been no conclusive proofs brought forward that this theory is correct. Cancer cells can undoubtedly be killed by X-rays, but judging from our experiments the amount of X-rays which can safely be given man without causing burns and other deleterious effects, is not sufficient to kill the cancer *in vitro*."* Further on in the article from which this quotation is taken, the same writers say that the X-rays have given almost uniformly beneficial effects in but one type of malignant disease in human beings, namely, skin cancer, particularly of the basal cell epithelioma type. They say that when a cancer graft is exposed *in vitro* to X-rays, the destruction of the cancer cells requires an amount of the rays which is not comparable to the amount that can safely be given to a living animal, and that if only such an amount be used as may safely be given a living animal, no effect is produced on the vitality of the graft. The fact that small doses of the X-rays will stimulate the production of lymphocytes and so limit the growth of the cancer, seems, with the light now before us, to be the only benefit given by this agent, and much more research and discovery is necessary before we can say that we have a reliable curative agent for this horrible affliction.

*Studies on X-ray Effects. VI. Effect of the Cellular Reaction Induced by X-rays on Cancer Grafts. By James B. Murphy, M. D., Raymond G. Hussey, M. D., Waro Nakahara, Ph. D., and Ernest Sturm. From the Laboratories of the Rockefeller Institute for Medical Research. Published in The Journal of Experimental Medicine, March 1, 1921; Vol. liii, No. 3, pp. 299-313.

UNUSUAL APPEARANCE OF A BULLET WOUND.

By JAMES M. WHITFIELD, M. D., Richmond, Va.
Coroner of Richmond.

The following report of a case of suicide which occurred in this City is submitted because it contains some special features which it is hoped will be helpful as well as interesting.

Mr. Y., aged about 40 years, came to a hotel in this City late in the afternoon on May 21. After talking to acquaintances in the hotel office, he went to his room about 8 P. M. About 11:55 P. M., two sounds were heard in his room—the first, that of a pistol shot, the other that of a falling body. The clerk forced open the door which was locked on the inside, and Mr. Y's. body was found lying on the floor giving no evidence of life.

When viewed by the Coroner it was lying on the floor of the room, face down, head toward the door, in a narrow space between the bed and the wall of the room; the lower limbs and the left arm fully extended downward, the right arm flexed under the body. It was fully dressed except that the coat had been removed before the shooting.

There was a quantity of blood and some brain matter on the floor about the head. Near the head on the floor, was a small pile of plaster which had fallen from what appeared to be a freshly made bullet hole in the ceiling of the room. Lying on the floor near the left foot was a pistol containing one empty and four loaded shells.

From the position of the body and the conditions surrounding it, it appeared that Y. had shot himself with his right hand while seated on the edge of the bed, then dropped the pistol, stood up and fallen forward—or that he had shot himself while standing.

The examination of the head revealed a wound on the right side, in the hair, beginning about 3 inches above the root of the ear, extending upward, backward and to the left. The lower end of the wound was a slit as though made by a cutting instrument; the upper and posterior end was irregular and with ragged edges. The hair was burned all around the wound; the skin was burned below and about the lower end and sides of the wound; no powder grains embedded in the skin were seen. Under the scalp wound was a hole in the skull about ¾ of an inch in diameter, on the edge of which was stuck a small piece of the lead bullet.

This question now arose:—How could one bullet make only one wound in the scalp, on the right side of the head, break a hole in the skull, and then make a hole in the ceiling on the victim's left side?

A careful examination of the wound disclosed that what was supposed to be one was really two wounds, the anterior and lower slit-shaped wound being separated from the posterior and upper irregularly shaped opening by a narrow band of skin, not more than ⅛ inch wide. This latter must have been the wound of exit through which passed a portion of the bullet which had been split into at least three pieces by the edge of the hole

in the skull—one of these pieces going through the skull into the brain, one lodging in the edge of the bone, and the third piece passing out through the scalp and up into the ceiling.

A very important peculiarity of the exit wound in this case was the singed hair around it. The hair about such a wound is burned by the flame from the muzzle of the pistol and is said to be found only around the wound of entrance. In this case the missle entered and came out inside the burned area—demonstrating that, whatever may be said to the contrary, it is possible for the exit wound to present burned hair on the edges.

This knowledge may prove very advantageous to a physician on the witness stand who is being rigorously cross-examined by a persistent and astute lawyer.

1109 *East Broad Street.*

SUCCESSFUL HETEROGENOUS TESTICULAR TRANSPLANTATION IN MAN.

By MAX THOREK, M. D., Chicago, Ill.
Surgeon-in-Chief, American Hospital Chicago.

The literature of testicular transplantation shows that attempts to graft free testicles in man have not generally met with success. As with all other attempts at free grafting the difficulty has been to obtain vascularization. If such a testicular graft can be made to "take" and become vascularized there is but little doubt from the findings of experimental investigations that the graft will function and produce its peculiar hormonic effects, viz: The betterment and maintenance of male physical and sexual characters and stimulation of sexual desire.

The brilliant animal experiments of Voronoff of Paris, which were published in 1919, and supported by histological findings, proved that transplantation of testicular tissue from young to old animals of the same species was followed by vitality of the graft and that such implantation of a free graft could be expected to be followed by clinically demonstrable renewal of physical and sexual vigor and sexual impulses which had become lost or impaired.

In man the attempts at testicular transplantation having for their object the renewal of physical and sexual well-being have been comparatively few and only partly successful.

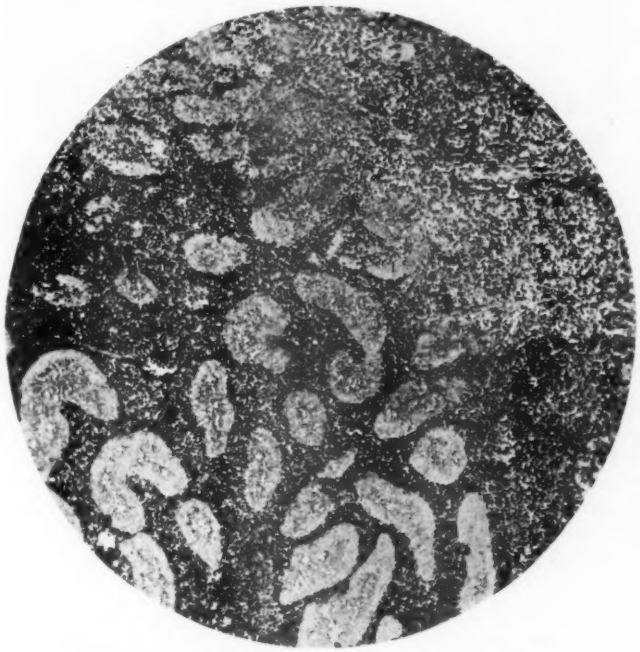

Fig. No. 1. Photomicrograph. Transplant of testis of higher ape into human. Author's technique. Magnification 60 diameters Observe regression of tubuli seminiferi, proliferation of interstitium and vascularization. Removed four months after transplanatation.

In many cases the graft was expelled or became absorbed. Only in very few cases was it verified by histological investigation that the graft lived.

There was no doubt, however, that in most cases the graft as long as it functioned did effectually promote the physical and sexual well-being of the patient in whom such a transplantation was made. It was clear to me, therefore, that if some practical method could be found by which the taking of a testicular graft could be assured, there could be but little doubt that it could be counted upon to restore lost physical and sexual capacity by the effects of its particular hormone on the whole organism.

From study of the literature of the subject, and especially after visiting the Clinics of Voronoff in Paris and Steinach in Vienna, I became convinced that testicular transplantation could become a matter of practical surgery.

The difficulty of obtaining vascularization could, I believed, be overcome by a suitable method of implanting the graft and selection of a better site for it than those usually adopted. The great difficulty, however, lay in obtaining suitable material for grafting. That human testicular tissue, if young and obtained from a subject free from disease, was the ideal material there could be no doubt, but such material was manifestly for very obvious reasons difficult to obtain. The next best thing was to obtain material from animals of the nearest biological approach to man, although the results from animals to man did not hold out hope for much success.

By a series of experimental investigations carried out during some years, I have devised a new technique in treating and implanting the graft which I call the "lantern" method of testicular transplantation and which has given me most satisfactory results, as regards the taking and vascularization of the graft.

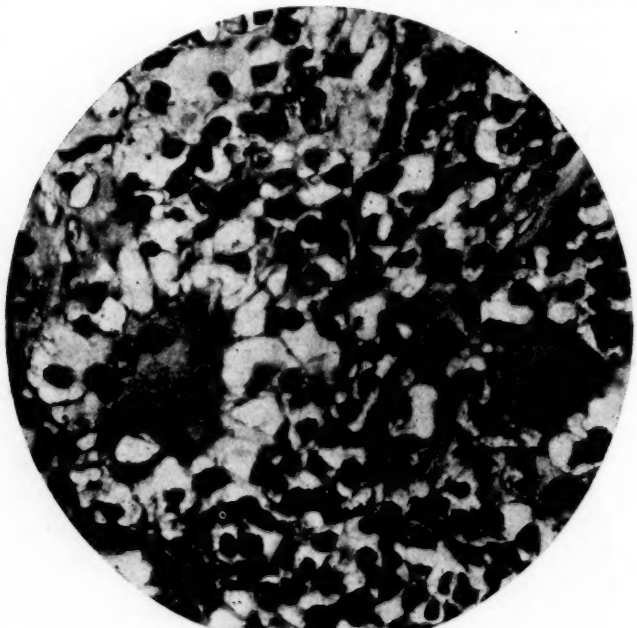

Fig. No. 2. Same. Magnification 560 diameters. Observe Leydig cells, giant cells and abundance of cell life in well nourished area.

I have also succeeded in successfully transplanting testicles from the higher apes to man and have obtained clinical and histological results which are in every respect analogous to the best results previously obtained in transplantation of human testicles.

Such testicles transplanted from apes have been removed from the human hosts after several months and are histologically proved to be living, well vascularized, and with full

activity of the interstitial glandular tissue. This, as far as I know, is the first time that such a result in a transplant from ape to man has been histologically verified. The accompanying illustration is the reproduction of the microscopic examination of a section from a testicle removed several months after transplantation. It shows regression of the seminiferous tubules, proliferation of the interstitial elements, and vascularization.

I have made a large number of such transplantations from ape to man; and, in the cases in which I have employed my improved lantern technique, I have almost invariably obtained excellent results. The full details of my surgical method and clinical findings in all these cases will form the subject of a later complete report, as I am at present only in a position to state the preliminary facts.

SYPHILIS OF THE LUNG WITH REPORT OF A CASE*

By ALLEN T. HAWTHORNE, M. D., Harrisonburg, Va.

Syphilis of the lung is a rare condition in comparison with some of the more common diseases of the lung, but it is not as extremely rare as some would have us believe. In recent years many cases have been reported, and many more could have been, had they not been overlooked. Therefore, it is not because of the supposed rarity of this condition that I have selected it as the subject for my paper, but because of the fact that it is a condition overlooked or else diagnosed as pulmonary tuberculosis. If my paper serves to bring these facts clearly before you, then the time consumed in its preparation will be considered well spent.

I shall not attempt to review the literature on this subject, because to do so would only serve to increase the subject matter of my paper without materially adding to its value.

It is with pulmonary tuberculosis that we are most liable to confuse pulmonary lues. But if our cases are carefully worked up, constantly keeping in mind the possibility of both conditions, there need be but few mistakes. I do not think that a diagnosis of syphilis of the lungs should ever be made until we have ruled out tuberculosis. In this connection, it is well to remember that in many cases the two conditions may be present in the same individual at one and the same time. Syphilis of the lungs may be assumed to be present when tuberculosis is excluded, and the patient has elsewhere the signs of syphilitic infection, or a positive Wassermann. You will note that I say "assumed"—not proven. But as I shall bring out more clearly elsewhere, we must not give too much weight to a negative Wassermann.

There are certain fundamental factors which aid us in the diagnosis of pulmonary lues, and its differentiation from tuberculosis.

1. History.—A carefully elicited history will in many cases give us the clue to the diagnosis. The family history is second only in importance to the patient's own history, both past, and that dealing with the present illness.

2. Onset.—The onset of pulmonary lues is, if such a thing be possible, often even more insidious and latent than that of incipient tuberculosis. And here, as in tuberculosis, if we wish to get the best results, we should get the disease in its incipiency.

3. Condition of the Patient.—It is striking how well a patient will appear to be when suffering from syphilis of the lung, as compared to a patient having the same amount of pulmonary involvement of a tubercular nature. Observation of this fact alone may often aid us in reaching a correct diagnosis.

4. Fever.—Pyrexia is the rule in pulmonary lues—the fever usually being highest in the evening as in tuberculosis. However, the fever is not near so constant in lues as in tuberculosis. Oftentimes it may simulate the temperature range seen in a septic infection. The fever in pulmonary syphilis yields promptly to the iodides, while, as you know, pulmonary tuberculosis is aggravated by the administration of iodides. Any fever continued over a long period of time, with little deterioration of health, should awaken suspicion as to the probability of syphilis being present.

5. Cough and Hemoptysis.—Cough is present as in tuberculosis, and expectoration may be profuse, but hemoptysis is rare.

6. Sputum.—The sputum will, of course, unless there is present an associated tubercular infection, be negative for tubercle bacilli. A sputum persistently negative for tubercle bacilli, from a patient with signs and symptoms simulating tuberculosis, should bring to our minds instantly the possibility and probability of pulmonary syphilis. By special lab-

*Read before the Valley Medical Association at Harrisonburg, Va., May 25, 1922.

oratory methods, the spirochaeta can be demonstrated in the sputum in many cases of syphilis of the lung.

7. Dyspnoea.—Dyspnoea is present and more marked in syphilis of the lung than it is in tuberculosis. This is due, perhaps, to the fact that the pulmonary lesions of syphilis are more pronounced at the bases of the lungs, while the lesions of tuberculosis are more marked at the apices, and also because there is apt to be more circulatory involvement in the syphilitic cases.

8. Loss of Weight, Appetite, and Strength.—These symptoms are always present at some stage of pumonary lues, but are never so marked as in tuberculosis. As mentioned above, often the patient may appear to be in fairly good physical condition, and at the same time have a moderately advanced case of syphilis of the lung. This, however, is not always the case, as I shall presently point out to you. Because, in the case I am reporting, there was marked loss of weight, appetite and strength.

9. Night Sweats.—Nocturnal sweats are the rule in syphilitic lung conditions, but are more variable in character than in tuberculosis. In those cases showing an atypical temperature curve, there is usually a marked variance in the sweats.

10. Wassermann.—The Wassermann test will usually be positive in syphilis of the lung, but not always. Our experience has shown us that clinically we may often have a clear-cut case of syphilis in any organ of the body, and yet get a negative Wassermann. So, while we cannot disregard a negative Wassermann, we cannot afford to give it undue emphasis.

11. Lung Findings.—When we examine the patient's chest, there are certain characteristic pulmonary findings which will aid us in our differential diagnosis. In the first place, syphilis usually attacks the middle, or the bases of the lungs, most frequently the latter, leaving the apices free. This is in marked contrast to tuberculosis which almost uniformly attacks the apices first. In fact, Dr. Lawrason Brown, of Saranac Lake, claims that the burden of proof is on any man who makes a diagnosis of pulmonary tuberculosis when there is no involvement above the second rib in front, or the third vertebral spine in the back.

The pulmonary lesions of syphilis are also characterized by marked dullness, and diminution of breath sounds with a paucity of rales. These rales will, when present, be almost uniformly found at the bases of the lungs. They are usually dry and crackling.

12. Therapeutic Test.—Oftentimes the diagnosis is only made by the therapeutic test, namely, the institution of vigorous anti-syphilitic treatment, which is followed by a cure or, at least, a marked improvement in the patient's condition.

13. Treatment.—The treatment is that which we would pursue in a case of syphilis elsewhere in the body—namely, salvarsan, mercury, and iodides, together with such tonic and hygienic treatment as would tend to aid in restoring the patient to health and strength. An early diagnosis is very necessary, if we would hope to get striking and lasting results.

Report of Case.

White woman, laundress, aged 45, first seen on December 21, 1920. The following history was obtained:

Family History.—Father living; age 69; in fairly good health, except that he suffers great deal with headaches. He had during childhood what was supposed to be tuberculosis of the bone. Patient's mother died at age of fifty from "paralysis." Three brothers living and well. Three sisters living and in fairly good health. One aunt died of tuberculosis; one aunt died of "cancer of the stomach."

Past History.—Patient had the usual diseases of childhood, such as measles, mumps and whooping cough and, in addition, had scarlet fever and diphtheria, with no sequelae so far as she knows. Never suffered from tonsillitis. Supposed to have had typhoid fever at age of 35, but was only confined to bed for about two weeks. Has suffered with rheumatism since childhood. At age of sixteen, was confined to bed for one year with rheumatism. Always had at time of rheumatic attacks, a red, splotchy, eruption, which faded away slowly as she improved. Previous to present illness, had had no attacks of rheumatism for several years. During childhood had many open sores on feet and legs, which were slow in healing. Left deep scars, which are now visible. Menstruated first at age of fifteen; has menstruated regularly every four weeks since. No menorrhagia or metrorrhagia, but dysmenorrhea and leucorrhea since menstruation began. Was married and lived with husband for several years but was never pregnant. Three years ago first noticed a small

lump in right breast. Was told by a physician that this was cancer, and an operation was advised. Breast was very sore but not red or swollen. Year later noticed a similar lump in the left breast. Both masses gradually grew larger.

Present Illness.—Two weeks previous to December 21, 1920, patient had been suffering with pain in left shoulder and both knees. On December 19, she noticed purplish red splotches over the lower extremities. She had had a poor appetite, an occasional night sweat, malaise, and some dyspnoea, for several months previous. Had lost some weight; she did not know how much.

Physical Examination.— White woman; apparently aged 45; poorly nourished; slightly anemic; evidently suffering considerable pain. Temperature 101; pulse 124; respiration 22. Complaining of pain in left shoulder and knees, and dyspnoea on lying down or on slight exertion.

Head and neck negative except for several decayed lower teeth. Pupils reacted normally to light and accommodation. No cervical glands enlarged.

Thorax.—Heart slightly enlarged downward and to the left. Apex at lower border of fifth interspace, three and one-fourth inches from the midsternal line. Loud, blowing, systolic and diastolic murmur; to and fro murmur, heard best at the apex, but transmitted quite audibly to the axilla. Blowing, systolic murmur also heard at the tricuspid area; and slight systolic murmur heard at second right interspace. Slight thrill at apex. Chest poorly developed; expansion poor. Supraclavicular fossae deep; no palpable glands. Fremitus slightly decreased at both bases. Resonance considerably diminished at both bases. Few dry, crackling, rales, over both lungs, principally at bases. Both breasts were tender and showed nodular masses. No redness nor inflammation. No palpable axillary glands.

Abdomen.—Negative except for slight tenderness in the right lower quadrant. Liver and spleen not enlarged.

Extremities.—Left shoulder joint slightly swollen, tender, and stiff; movements painful. Both knees slightly swollen, tender, and stiff. Purpura over both lower extremities. Scars on both ankles. No swelling of limbs or ankles.

Pelvic Examination.—Slight purulent discharge from vagina. Tenderness in right fornix; retroverted uterus; no lesions on genitalia.

Urinalysis.—Sp. g. 1.018; acid; slight trace of albumen; no sugar; few pus cells; no blood or casts.

Wassermann.—One week later was negative.

Patient was kept in bed and given salicylates and digitalis. Improvement was gradual and, in a few weeks, patient was able to resume her work as a laundress. She was now free from pain and her dyspnoea was diminished. In February, 1921, patient began to cough a great deal, and have occasional night sweats. She coughed up a large quantity of frothy sputum, but no blood. Her temperature in evening ranged from 100 to 102. Dyspnoea was more marked than previously. Appetite was very poor; continued to lose weight, and was practically bed fast. The lung findings were as previously noted, with the possible exception that they were more pronounced. Sputum and Wassermann negative.

On March 9, 1921, patient was admitted to the hospital. Her temperature range was from 97.6 in the morning to 100 in the evening. Pulse range from 90 to 120. She was put to bed on forced feeding and plenty of fresh air, but showed little improvement. On March 17, under local anesthesia, the left breast was amputated. Sections from this showed it to be a chronic mastitis, the definite nature of which was not stated by the pathologist. I rather expected a luetic origin, and consequently put the patient on daily inunctions of mercurial ointment. From this time (March 28) on, there was a beginning of improvement in the condition of the patient. On April 8, the right breast was removed under local anesthesia. On April 15, patient developed a localized periostitis and osteomyelitis of the left fibula, which was incised and drained on April 21. Four days later patient was given .9 gm. of neosalvarsan which was repeated weekly until six doses had been given. After the first dose of neosalvarsan, patient began to show marked improvement. Appetite increased, cough began to disappear, night sweats were less frequent, and there was a gradual gain in weight. On May 15 patient was put on potassium iodide gr. XV t. i. d. p. c. From this date until June 1, 1921, when patient was discharged from the hospital, she never had any temperature. When she left the hospital, she had no cough, dyspnoea, nor night sweats. Her appetite was splendid, and she was slowly

gaining weight. She was instructed to keep up her iodides and mercury.

This patient was last seen on December 27, 1921, when she came in to consult me as to the advisability of matrimony. Examination at this time showed the following: Patient had gained 15 pounds in weight; color was good; arthritis very seldom bothered her; appetite was splendid; there was no cough, dyspnoea, nor night sweats. Lungs showed a few crackling rales at both bases. She stated that she felt better than at any time for years.

Here then I think we have a case of syphilis of the lungs which was only proven so by the institution of antisyphilitic treatment which was followed by beneficial results. You will note that in this case the Wassermann was always negative and that the case closely simulated pulmonary tuberculosis. I am of the opinion that in those cases simulating tuberculosis, after we have ruled out tuberculosis, we should institute antisyphilitic treatment, regardless of the fact that the Wassermann may be negative, on the assumption that we are dealing with a case of syphilis of the lungs.

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OPTOMETRY—ITS LIMITATIONS AND DANGERS.*

By HUNTER H. McGUIRE, M. D., Winchester, Va.

We are living in an age in which the truth of the saying of P. T. Barnum, that "The American people like to be humbugged," is more apparent than it was in the days when that noted showman gathered in his shekels from a not unduly discriminating public. This characteristic of the American people represents very accurately the attitude of the public towards the medical profession as a whole and to the various specialities which, because of the demand for highly developed talent, have originated in that profession.

Realizing that the layman and especially the unintelligent layman, because of a lack of knowledge concerning the so-called mysteries of medicine and surgery, is unable to always exercise an unerring judgment with regard to the treatment of his physical disabilities and impressed with the opportunity for commercializing this innate weakness on the part of mankind, there has sprung into existence an army of charlatans and quacks whose sole purpose is to discredit scientific medicine and to enrich their coffers by the dissemination of false propaganda with regard to the treatment of disease.

We are all thoroughly familiar with the practices and methods of the osteopaths, the chiropractors, and the many and various healers, who have, in recent years, kept their activities so prominently in the public eye, and we are not unmindful of the efforts that have been made in the profession to curb these activities and to enlighten the public as to the spurious methods adopted by these so-called benefactors of the human race, but medical men as a body have failed to take note of one class of these individuals whose special province has been to impress the public with their ability to correct visual defects by methods superior to those in vogue by men who have made ophthalmology a life study. For many years the country has been flooded and the eyesight of the nation has been tampered with by an aggregation of charlatans, who, parading under various names, have traveled from home to home in the rural districts or set up shops in the towns and cities and proclaimed to the world, in the daily press or the county weekly, their special ability to cure most of the ills to which human flesh is heir, by means of optical lenses.

The eyesight specialist, the refracting optician, are terms which have been employed to designate this group until very recently when it was realized that a more high sounding title would be better adapted to their purposes and so, by a process of evolution, the word optometry has been brought forward as one which would appeal more strongly to a discriminating public.

Under the more refined title, the optometrist has added to his prestige by a more elaborate equipment of his shop, his messages to the newspaper readers, setting forth his virtues, are more carefully phrased and are furnished to him in job lots by the wholesale optical houses of the country.

Thus it is that optometry, by the creative

*Read at the meeting of Valley Medical Association at Harrisonburg, Va., May 25, 1922.

genius of a group of irresponsible men and effective newspaper advertising, has been brought into prominence and the American layman, always willing to accept something new and impressed with the name and the offer of free consultation, takes his eye to the shop for repairs just as he would his stick pin or his watch. But not only has the general public yielded to some extent to his daily appeals, but reputable physicians have been known to send patients to the optometrist for the correction of errors of refraction. While happily this practice is not common, the fact that even a few physicians, by referring patients, endorse his methods, gives to the optometrist an added security in the promulgation of his theories and practices.

Before condemning any method, however questionable it may be, which apparently has for its object the relief of human suffering, it is only fair and proper that medical men should investigate its merits and be in position to render an intelligent verdict based on facts and not on preconceived opinions with regard to anything outside of the domain of scientific medicine.

Now let us investigate optometry. What does it mean? What are its limitations and dangers? If it has merits, what are they? If it is an evil, how can it be suppressed?

The origin of the word optometry is obscure and its derivation is therefore unknown. Two definitions of the term are given in the American Encyclopedia of Ophthalmology, namely, "The measurement of the range of vision and the measurement of visual acuity and the fitting of glasses to correct visual defects." To these definitions the following sentence is significantly added: "A term adopted by opticians who prescribe and fit glasses." If these definitions are correct, and there is no reason to assume that they are not, it must be admitted that the sphere of usefulness of the optician, or so-called optometrist, is limited to the mechanical correction of visual defects by optical lenses, without taking into consideration the many and varied conditions of the eye and of the body which are frequently associated with errors of refraction. In other words, he treats and regards the eye more as a mechanical instrument whose defects and abnormalities are capable of being entirely corrected by mechanical measures than as a human, vital organ, delicately and wonderfully constructed, whose function is closely interwoven and harmoniously blended with those of the other organs and structures which go to make up the human economy.

It is a well known fact that refraction work comprises fully three-fourths of the activities of the ophthalmoligist and that his success as an ophthalmologist is largely dependent upon his ability as a refractionist.

The art of refraction, and it is an art, necessitates more painstaking effort and more mature judgment than any other branch of ophthalmology. Not only must the refractive state of the eye be carefully and accurately estimated by every known scientific method, but the eye must be studied for evidences of disease or structural defects and the body for conditions which influence the action of the ciliary and the external ocular muscles.

It is also well known in ophthalmology that in the great majority of cases it is the latent error of refraction which is the responsible factor in the production of eye-strain and the train of symptoms which result from eye-strain. In other words, it is that degree of error which is overcome by the action of the ciliary muscle and which cannot be accurately determined unless the eye is under the influence of a cycloplegic and objective methods are employed to discover it. No refraction estimation is complete without the use of the ophthalmoscope, the retinoscope and other instruments of precison which enable us to determine, objectively, the amount of the error and its character, and no prescription for lenses should be given any patient until his eyes have been studied for evidences of disease as well as for abnormalities of the refractive state. It is hardly necessary to add that such examinations should only be undertaken by the trained medical man.

The impression seems to be current that if the eyes are free from disease, the optometrist is just as capable of providing proper lenses for the correction of errors of refraction as the ophthalmologist. If we look critically into the methods of examination employed by the optometrist, it is not difficult to see the absurdity of such statements. His examination, if we might term it such, is limited to the employment of test lenses and test types for the determination of the amount and character of the refraction error and he is de-

pendent entirely upon the statements of his patient to verify his findings. He has absolutely no means of estimating the total refraction error in the case of hypermetropia or of knowing whether he is dealing with an artificial myopia due to a cramped ciliary muscle or a swollen lens, or a true myopia resulting from an elongation of the anteroposterior diameter of the eye. He cannot use the ophthalmoscope because years of experience are necessary to master this instrument, particularly in estimating refraction errors, and he is unable to use the retinoscope because the law does not permit him to use drugs to relax the accommodation, an essential condition for obtaining correct results in retinoscopy.

It would, therefore, appear to be quite evident that the optometrist with his limited mechanical and mental equipment, his pitiful lack of knowledge concerning physiological optics, and the very crude and inadequate methods he employs, is not the proper person to take charge of a refraction case even though the eye be free from disease or structural defects. Those of us who are daily brought in contact with the results of his activities cannot fail to be impressed with the number of poor little tired ciliary muscles to whose burden he has added and which are tormented in an effort to adjust themselves to inappropriate lenses.

So much for the limitations of optometry and now let us consider the more serious side of the situation—what are some of its dangers?

In considering this aspect of the subject, certain facts should be kept in mind. In the first place it should be remembered that the great majority of optometrists are uneducated men, and I am not referring to medical education, but to the well rounded individual who has been broadened and cultured by academic and collegiate training. They, therefore, lack those qualities of mind which, if directed into proper channels might make them subserve some useful purpose. There are, of course, some exceptions to this rule, but the vast majority of optometrists today are men who have gained their knowledge of the human eye from the optician's shop or the jeweller's bench. A limited number obtain degrees from so-called colleges of optometry which issue diplomas after the applicant has studied a course of lectures which are sent him through the mails, and a smaller number are graduated from the school of optometry of Columbia University, where, much to its discredit, a course is given in this branch.

Does it not constitute a grave danger to the American public when it is realized that a large number of our citizens are entrusting their eyesight to men who are neither fitted by training nor environment to minister to the needs of the most delicate organ in the body, and who represent a so-called profession which seeks to impress the public with a high sounding title and false propaganda through the daily press?

Hardly a day passes that the busy ophthalmologist is not called upon to treat pathological conditions which the optometrist has attempted to correct by optical lenses. Beginning glaucoma, incipient cataract, optic nerve atrophy, gross intraocular changes, and choked disc, the result of brain tumor, are a few of the lesions which he feels are capable of correction by specially ground glasses and the pitiful part of it is that these patients, in the delusion that glasses will help them, are frequently permitted to go hopelessly blind before they seek relief from those who are competent to give it.

Only recently, in fact while this paper was in course of preparation, a young girl with a densely infiltrated vitreous and other evidences of a very acute uveitis presented herself for treatment because the concave lenses which the optometrist had prescribed were not curing her trouble. Hundreds of just such instances, as they daily occur in the routine practice of every ophthalmologist, could be cited and I am sure that the ophthalmic members of this society will bear me out in this statement. The optometrist is feeding the ophthalmologist but he is feeding him with material which represents inaccuracy, gross malpractice, and frequently with destructive intraocular changes which could have been prevented if the patient could have been seen in their incipiency.

No one has a higher regard for the ethical prescription optician than I. His work is important and the advances he has made in lens grinding and in perfecting optical accessories have proved to be a blessing to humanity but, when by reason only of his mechanical knowledge he attempts to treat visual defects, he becomes a public menace and his use-

fulness is at an end. It is just as logical for the manufacturer of surgical instruments to do surgery and for the druggist who compounds prescriptions to prescribe for his customers as it is for the optometrist to treat diseases and abnormalities of the eye,

Is he interfering with the work of the reputable specialist in eye diseases? Absolutely no. His newspaper notoriety excites the interest of the public with regard to visual defects and the public seeks assistance from both the oculist and the optometrist. Furthermore, a large proportion of his cases, because of ineffectual results, finally find their way to the office of the ophthalmologist. I think I am not overstating the case when I make the assertion that the advent of every new optometrist in a community means increased work for the trained specialist in eye diseases.

If I have succeeded in proving my contention that optometry is an evil, what can be done to correct it and how can the public be protected?

I do not believe anything can be accomplished by legislative enactment. Any attempt to legalize optometry would only serve to create the impression that it was elevated to the plane which the various specialties of medicine occupy and would give it an undue importance in the public estimation. In my opinion, the general practitioner of medicine is the one man who can enlighten his patients and through them the general public, as to its limitations and with regard to its dangers. Because of the frequency with which patients seek his advice concerning their ocular troubles, he is in a position to intelligently impart that knowledge which every layman should acquire, concerning that most precious possession of the human race, the eyesight which God has given us. He alone can impress his patients with the truth as it should be known and he alone can free them from those influences and agencies which seek to destroy and bring into disrepute those methods of procedure which ophthalmology has endeavored to contribute to scientific medicine.

HISTORICAL NOTE ON APPENDICITIS.

By B. M. RANDOLPH, M. D., Washington, D. C.

I was much interested in reading in the June number of the VIRGINIA MEDICAL MONTHLY the "Rambling Remarks In Re Appendicitis," of Dr. Stuart McGuire. Like him, "I have often wondered how a condition which was so frequent and fatal could have escaped recognition by clinicians of the past, who were justly noted for the accuracy of their observations." I wonder still more since some years ago I came across the fact that there was published more than forty years before the contribution of Fitz, a very competent clinical and pathological description of appendicitis, which the medical and surgical profession saw fit to bury for a generation. The thing is inexplicable, for assuredly the names of Richard Bright and Thomas Addison were the names of men whose teachings could not properly be ignored.

What follows I have copied from a book found in the library of the Surgeon-General of the Army, in Washington, entitled, "Elements of the Practice of Medicine," by Richard Bright, M. D., and Thomas Addison, M. D., London, 1839, pp. 498-501.

"INFLAMMATION OF THE CAECUM AND APPENDIX VERMIIFORMIS."

"That portion of the intestine which is lodged in the right iliac region is frequently the seat of inflammation, and affords peculiar symptoms, with which it is right that the student should be well acquainted. The history of this affection is often as follows: The patient has complained, more or less, for some time past, of pain and uneasiness in this part increased on exertion, or after neglect of the bowels, or excess in eating and drinking; he has, however, retained such share of health, that he has not been interrupted in his daily avocations, till, after some unusual exposure to cold, or some long walk, or other over-exertion, he has been suddenly seized with more severe pain, attended with rigors, chills, and sometimes with sickness and violent vomiting. The pain and tenderness become excessive, and extend to the neighboring parts of the abdomen. A hardness and tumefaction are soon very evident to the hand in the part first affected; this continuing, general symptoms of peritonitis often take place, and terminate fatally; but under careful treatment, the inflammation remains circumscribed, and becomes even less extensive, assuming the form of a local, deep seated abscess. The threatening symptoms of peritonitis subside; the tumefaction just

above the crest of the ilium on the right side is more and more obvious to the touch, and gradually shows a tendency to point; the constitution still suffering severely. In process of time it either opens of its own accord, or is assisted by the lancet, and a discharge of ill-conditioned pus follows, which, from its peculiar fetid smell, and from its appearance, is soon discovered to be mingled with feculent matter. The discharge continues for many weeks, and the patient often sinks at length from exhaustion. In other cases, when the powers of the system are previously unbroken, the abscess closes, and permanent recovery is obtained.

"*Mordid Appearances.*—From numerous dissections it is proved that the faecal abscess thus formed in the right iliac region arises in a large majority of cases, from disease set up in the appendix caeci. It is found that this organ is very subject to inflammation, to ulceration, and even to gangrene; and moreover, that it is occasionally thickened and ulcerated from tubercular deposits, if the peculiar diathesis favors that change; so that this little worm-like body is often detected in the midst of the abscess, with a perforation at its extremity; or by ulceration higher up in its parietes, a considerable portion of it, nearly or entirely separated, is found in a disorganized condition amongst the pus and faeces which fill the abscess.

"*Exciting Causes.*—It is possible that the secretions of the appendix itself may sometimes become diseased, and give rise to inflammatory action in the part; sometimes we can plainly discover that stricture, amounting even to occlusion of the cavity, has taken place, so that the extremity has been distended with its own secretions; and this may probably give rise occasionally to inflammation; at other times we find little oval masses of faeces impacted in the canal, which have pretty obviously produced the irritation; sometimes a foreign substance, as a cherry stone, or other seed, has been detected in the appendix; but one of the most common causes is undoubtedly the formation of a peculiar concretion which is moulded to the extreme cavity of the canal, and which is composed of coats or layers of the earthy phosphates, with occasional alternate layers, probably, of animal secretion, or of feculent matter."

These great clinicians were physicians to Guy's Hospital, and lecturers on the practice of medicine. The book quoted from was written for their students. These students were of sufficient calibre to appreciate the importance of Bright's disease of the kidneys, of Addison's disease of the suprarenals, and of Addisonian anaemia, but seem to have ignored what should have been epoch-making observations on appendicitis. I can attribute it only to a state of mind as prevalent today as it has been in the past, viz., a lack of interest in the post mortem examination.

2010 *R Street, Northwest.*

The Truth About Medicine

During July the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial remedies:

The Abbott Laboratories:
Neocinchophen-Abbott Tablets 5 grains.
Louis Hoos:
Hoos Albumin Milk.
Mallinckrodt Chemical Works:
Benzyl Benzoate—M. C. W.

Book Announcements

Diseases of the Skin. By HENRY H. HAZEN, A. B., M. D. Professor of Dermatology in Medical Department, Georgetown University, and in Medical Department, Howard University, Washington; Sometime Assistant in Dermatology in Johns Hopkins University, Baltimore. Second Edition. St. Louis. C. V. Mosby Company. 1922. 8vo. 608 pages with 241 illustrations, including two color plates. Cloth. Price, $7.50.

Principles and Practice of X-Ray Technic for Diagnosis. By JOHN A. METZGER, M. D., Roentgenologist to School for Graduates of Medicine, Medical Department, University of California, Southern Division, Los Angeles. St. Louis. C. V. Mosby Company. 1922. 8vo. 144 pages with 61 illustrations. Cloth. Price, $2.75.

Hughes' Practice of Medicine. Including a Section on Mental Diseases and One on Diseases of the Skin. Twelfth Edition. By R. J. E. SCOTT, M. A., B. C. L., M. D., New York, Editor of "Witthaus' Essentials of Chemistry and Toxicology," etc. Philadelphia. P. Blakiston's Son & Co. 810 pages with 63 illustrations. Cloth. Price $4.00.

The Practical Medicine Series. Comprising 8 volumes on the Year's Progress in Medicine and Surgery. Under General Editorial Charge of CHARLES L. MIX, A. M., M. D. **Volume I. General Medicine.** Edited by George H. Weaver, M. D., Lawrason Brown, M. D., Robert B. Preble, A. M., M. D., Bertram W. Sippy, M. D., and Ralph C. Brown, B. S., M. D. Series 1922. Chicago. The Year Book Publishers, 304 South Dearborn Street. Cloth. Price of this Volume $3.00. Price of series of 8 Volumes $15.00.

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Editorial

Gastric Analysis and the Stomach Tube.

No matter what the trend of opinion, from time to time, may be, in regard to the value of gastric analysis in the diagnosis of disease of the stomach, the fact remains that stomach function must always claim a prominent place in the problems of diagnosis. In addition, it may be said that the use of any diagnostic procedure, no matter how incomplete, which may throw light upon the functionation of the stomach, must be used by the diagnostician in attempting to assemble the needed evidence in disease problems.

Through some sort of pessimistic influence, the stomach tube and duodenal tube, in the fractional testing of gastric contents, of late, have been lightly spoken of as diagnostic instruments of value. This is, indeed, much to be lamented. These instruments for studying stomach function and stomach conditions are of undoubted value. Fortunately, champions of the stomach and duodenal tube are not lacking. Only a just evaluation of the stomach conditions, as obtained from studies of its contents after the test meal, is desired by its advocates. Extravagant claims are not made by them but it is held that a reasonable understanding of the common disorders of the stomach may be obtained by use of the stomach and duodenal tube. The writer wishes to take sides with the latter group and urge the more frequent use of the stomach and duodenal tube in the study of cases presenting symptoms referable to the stomach. Roentgen ray study, by fluoroscope and plate, of stomach contour and motility, is an important associated method of invaluable service in well rounded gastric examinations.

But, clinically, although the patient protests, it is quite unsatisfactory to rely wholely upon x-ray examination. The stomach tube may furnish important data as to the nature and amount of the gastric secretion. For instance, the presence of excess of mucus, blood, the concentration of hydrochloric acid, the odor, the state of digestion of food particles, the length of time required to evacuate the stomach, are but a few of the points which may be brought out in this sort of an examination. Again, only recently, while introducing a tube, and after we felt that the tip was in the stomach, we observed the return of the test meal, free of odor, and wanting in the usual appearance of gastric juice. Additional aspirations brought clear blood. Esophageal stricture was suspected. X-ray examination showed the tube dragging in a diverticulum above a well organized stricture at the junction of the second and lower third.

The duodenal tube is also of added value because of its uses in studying the secretions and contents of the duodenum and the gall tract. The recent work in lavage of this section of the alimentary tract is but another step in the refinement of methods which have for their end the more accurate study of the misfunction of this section of the gut. The Lyon method of lavage of the gall tract offers interesting possibilities in diagnosis as well as in therapy.

Gastric analysis may not be expected to disclose direct evidence of changes in the form and contour of the stomach: roentgen ray must be relied upon for that information. Besides, x-rays may be depended upon under fluoroscopic and plate studies to show alterations in form, mobility and position of the loaded stomach.

By the dual use of the test tube and roentgen rays, this important power of the stomach may be estimated: a prompt and proper evacuation of the gastric meal is a factor of significance in the ultimate complete usefulness of the food to the body; not to mention the harm-

ful effects upon the stomach itself and the body at large, of the too long retention, over long periods, in the stomach of putrefactive and fermentative food products. Clinicians are daily brought face to face with the problems of gastric retention.

Rehfuss and Hawk* have pointed out, we should observe that there are within the limits of normal health much variability in the evacuation time of the stomach.

Gastric analysis may be relied upon to throw important light upon the motor and secretory function of the stomach and, also, to disclose the evidence of pathological signs. So it is a narrow and limited view† of this question to say that the procedure of gastric analysis is a failure because of the claim that the small samples obtained may not be representative of the gastric contents remaining in the stomach. The acid concentration and the variation in the curve in the "fractional method" may be open to criticism, as to the invariable trustworthiness of the interpretations, but that fact should not invalidate the use of the method because of the wide range of positive facts on gastric work obtainable by its use. Even if it were the end of gastric analysis merely to obtain the degree of acidity of the stomach contents after the standard test meal, the procedure of gastric analysis is justified in the diagnosis of stomach conditions. But it is a procedure with possibilities of a far more reaching significance. As Rehfuss and Hawk* have stated, gastric analysis is "a measure of gastric work." This work of the stomach is disclosed by the gastric examination in the (1) motor function as shown by the time and duration required for the stomach to evacuate a standard test meal; (2) secretory function as shown by the variations of the acid curve during the intervals of gastric digestion; (3) the presence in expressed stomach contents of evidence of pathology as shown by mucus, pus, blood, bacteria, etc.

*Gastric Analysis: Fundamental Principles; Rehfuss and Hawk. J. A. M. A., Vol. 76, No. 6, page 371.
†Editorial, J. A. M. A., February 18, 1922, page 514.

News Notes

The Norfolk Convention.

Preparation is being pushed in Norfolk to be in full readiness for the coming meeting of the Medical Society of Virginia. The members of the Norfolk County Medical Society earnestly desire this meeting to be the best on record; and are hoping that every member of the State Society will do his part, at least by his presence; all the better if he will take active part in the program;—but in any case *COME!*

The Chairman of the Entertainment Committee, Dr. R. Lloyd Williams, and the State President, Dr. E. C. S. Taliaferro, are planning several enjoyable social events to supplement the excellent scientific program. Attendance upon either the regular sessions of the Convention, or the social features alone would be ample compensation for the time spent, but when both are combined the visitor will be richly rewarded for any sacrifice needed in order to be present. While the full program will be announced later, among the entertainment features will be an oyster roast, always a delight; an evening with the President, who is famed as a prince of hosts, his abilities in that direction being, however, surpassed by Mrs. Taliaferro's outstanding qualities as hostess. A smoker will probably be arranged during the meeting.

Special arrangements will be made for the comfort and pleasure of the ladies; a Special Committee in charge of this matter is making plans which they hope will result in enjoyment to a large number of visiting ladies. Let this meeting be marked by an unusually large attendance of wives and daughters. They need the change and we need the sunshine of their presence.

Hotel accommodation in Norfolk is ample. If you will make your wants in that direction known to Dr. R. Lloyd Williams, 405 Taylor Building, Norfolk, reservations will be made so that your comfort will be assured. Already applications for rooms are being received; better not delay getting in yours in good time.

Arrange to be here for the opening sound of the gavel, and remember that the last session will be the one from which you will derive most benefit, so do not be in a hurry getting away. Give those good people at home a chance for recuperation; your return will be all the more appreciated when it comes.

LOCKBURN B. SCOTT, *Sec'y*
Norfolk Co. Med. Society.

Notice to Wives of Members of the Medical Society of Virginia.

It is herewith announced that, at the annual meeting of the Medical Society of Virginia to be held in Norfolk, October 31—November 3, a Virginia Woman's Auxiliary will be formed, this to be composed of representatives from each county in the State. The work of the Auxiliary will be to look after the general medical interests of each community, especially in regard to child welfare, school sanitation, and the local health conditions. It is earnestly hoped that a large number of ladies will attend and assist in having Virginia to be one of the first states to join in this National movement, which has the approval of the American Medical Association.

For information as to the organization of this Auxiliary, address the Medical Society of Virginia, 104½ West Grace Street, Richmond.

The Gorgas Memorial Fund.

At the St. Louis annual session of the A. M. A., the Board of Trustees reported to the House of Delegates that in response to a request received from the directors of the Gorgas Memorial Institute of Tropical and Preventive Medicine for the co-operation of the American Medical Association, the Board had taken action which resulted in the appointment of the following committee, representing the Association, to act on the project: Dr. George E. de Schweinitz, Philadelphia; Dr. Charles W. Richardson, Washington, D. C., and Dr. Fred B. Lund, Boston. The House of Delegates unqualifiedly endorsed the Gorgas Memorial.

Upon the suggestion of President Porras of Panama, it has been resolved that a fitting memorial shall mark the humanitarian service of the late Major General William C. Gorgas, and the beneficent influence of his life and work on mankind throughout the world.

The plan is to build at Panama an institute for the study of tropical and infectious diseases, with a hospital, laboratories, departments for research and all other facilities required in an institute of this character, erected and administered according to the most progressive, modern ideals. The Panamanian government, has donated the great Santo Tomas Hospital, and also the ground on which it is proposed immediately to construct the buildings as they have been described. Dr. Strong has been appointed the scientific director.

An endowment of six and one-half million dollars will be required to enable the institute to carry on the work according to the plans which have been formed.

In conjunction with this work in Panama, there will be established in Tuscaloosa, Ala., the Gorgas School of Sanitation for the purpose of training country health workers, sanitary engineers and public health nurses, especially educated to deal with the problems peculiar to the Southern states.

The Republic of Panama has demonstrated its interest in this enterprise with splendid liberality. The physicians of our country, will surely make a contribution of which they will be proud.

A central committee has been formed, with Admiral Braisted, retired, ex-President of the A. M. A., as its president. The committee of three is to work in accord with the central committee, and through its members this appeal is made to the American medical profession.

The campaign for funds is to be international. A large response is expected from North, Central and South America, since the nations of these countries have been the chief beneficiaries of the labors of General Gorgas. Any sum will be gratefully received. Checks should be drawn to the order of the "Gorgas Fund" and should be mailed to the American Medical Association, 535 North Dearborn Street, Chicago.

The Augusta County Medical Association

Held its annual meeting August 2nd, at Stribling Springs, the Society being guests of the President, Dr. W. S. Whitmore. Following a short business session, there was a banquet. Officers elected for the coming year are:—President, Dr. J. B. Stone, Churchville; vice-presidents, Drs. Geo. F. Hollar, Waynesboro; Guy Fisher, Staunton; and C. P. Rexrode, Mt. Solon; secretary, Dr. J. F. Fulton, Staunton; treasurer, Dr. J. L. Alexander, Staunton.

J. L. Fulton, *Sec'y.*

Prince Edward County Medical Society.

Present officers of this Society are: Dr. J. Weldon Smith, president; Dr. C. B. Crute, vice-president; Dr. Susan W. Field, secretary-

treasurer. All of these are of Farmville, Va. Meetings are held on second Thursdays, monthly.

The Clinical Congress of the American College of Surgeons

Will hold its twelfth annual session in Boston, October 23-27, 1922. As in the past the morning and afternoon sessions of each of the four days will be devoted to clinical demonstrations at the hospitals and medical schools. There will be five evening sessions and eminent American and European surgeons will be among the speakers.

A Physiotherapy Course,

Covering a year, will be offered at Walter Reed General Hospital, Washington, D. C., beginning October 2, 1922. Credit will be given for previous training in physical education, nursing, physiology, and anatomy, so that the course may be completed in six months or less. No tuition fees are required. Accepted candidates will be listed as student aides, and will be furnished quarters, rations, laundering of uniforms and $15 a month. Application blanks may be secured from the hospital upon request.

Dr. S. S. Gale

Has returned to his home in Roanoke, Va., after spending a few weeks at the Mayo Clinic.

Dr. George T. Harris,

Of Madison Heights, Va., has been appointed one of the school trustees for Amherst County.

Dr. J. H. Hare,

Of Newland, Va., has been elected president of the Stonewall Athletic Association, recently organized at that place.

The Southern Anesthetists

Will hold their organization meeting with the Southern Medical Association in Chattanooga, Tenn., November 13-16. All interested in attending or joining are urged to get in touch with Dr. William Hamilton Long, Organization Secretary, 1911 Duker Avenue, Louisville, Ky.

Dr. George P. Hamner

And family returned to their home in Lynchburg, Va., about the middle of August, after their annual camping trip on the Cowpasture River. Dr. R. M. Taliaferro, also of Lynchburg, was among the summer visitors at Dr. Hamner's camp.

Dr. and Mrs. Holcombe Robertson

And children, of Marcus Hook, Pa., were recent visitors at the home of relatives in Warrenton, Va.

Guests of Dr. R. E. Booker.

Dr. R. O. Lyell and family, of Miami, Fla., but formerly of Warsaw, Va., and Dr. P. G. Hundley and family of Lynchburg, Va., have been recent visitors at the home of Dr. R. E. Booker, at Lottsburg, Va.

Dr. George A. Stover,

South Boston, Va., is rapidly regaining his strength, after undergoing treatment at St. Elizabeth's Hospital, this city.

Dr. James O. Meade

Announces his removal from Fugates Hill, Va., to Mendota, Va.

Dr. Wilson E. Driver,

Of Norfolk, Va., has returned from Paris, where he went to attend the International Congress of Otology, which met in July. He took with him a patient to demonstate before the Congress a condition which he designates as auto-anaphylaxis of the ear.

Roanoke Doctors at White Sulphur Springs.

Drs. Claud Moore, N. F. Muir and G. L. Spitler, of Roanoke, Va., have returned home after a vacation spent at Greenbrier White Sulphur Springs, W. Va.

Dr. J. S. Horsley, Jr.,

Son of Dr. J. Shelton Horsley, of this city, is now serving as an interne at St. Elizabeth's Hospital, Richmond. Dr. Horsley graduated from Harvard University, Medical School, in June of this year.

The other interne at St. Elizabeth's Hospital is Dr. James Marquis, of Nebraska, who also graduated from Harvard this year.

The American Medical Editors' Association

Is to hold its fifty-third annual meeting in Cleveland, O., October 16 and 17, at Hotel Statler, during the annual convention of the American Public Health Association. Dr. Frank C. Lewis, of the *International Journal of Surgery*, is president, and Dr. F. H. McMechan, of the *Ohio State Medical Journal*, is secretary-treasurer.

Dr. R. L. Ozlin

Announces his removal from Dundas, Va., to 115 West Seventy-first Street, New York City.

Dr. Wm. B. McIlwaine

Has returned to his home in Petersburg, Va., after taking a special course in pediatrics in Boston and New York.

Dr. Thomas M. Winn,

Of Palmyra, Va., a graduate of the Medical College of Virginia in June of this year, has accepted an internship at Physicians and Surgeons Hospital, Wilmington, Delaware.

Dr. Warfield T. Longcope

Has been appointed professor of Medicine in the Medical School of Johns Hopkins University, Baltimore. Dr. Longcope was formerly professor of medicine at Columbia University, College of Physicians and Surgeons, New York.

Medical Education in the United States.

In the "Annual Presentation of Educational Data for 1922 by the Council on Medical Education and Hospitals," in a recent issue of the *Journal of the A. M. A.*, interesting statistics are given. Excluding premedical, special and post-graduate students, there were 16,140 medical students in the United States for the year ending June 30, 1922. This is the largest number since 1914. The three states furnishing the largest numbers of students were New York, Illinois and Pennsylvania, respectively.

It was noted that states having medical colleges contribute more students in proportion to their population than those which have no medical schools. Another interesting fact found was that the college which has a widely distributed alumni usually has a student body from an equally large number of states.

The number of women entering medicine is in the ascendency. During the past year 989 women were studying medicine, or 110 more than the previous year. Of all women matriculants, 121 were in attendance at the one medical college for women, while 764 were entered in the 67 co-educational colleges.

There are now 81 medical schools in the United States. Of these 74 are non-secretarian (regular), 3 homeopathic, 1 eclectic, and 3 nondescript. Sixty-eight of these are Class A colleges.

Dr. Charles C. Bass,

New Orleans, has been elected dean of the School of Medicine of Tulane University.

Dr. Henry J. Langston,

Who has been practising in Richmond, has moved to Danville, Va., and has offices in Arcade Building.

Dr. Susan A. Price

Has resigned as physician at Eastern State Hospital, Williamsburg, Va., and accepted a position as physician at Weston State Hospital, Weston, W. Va., with which hospital she was formerly connected.

Biltmore Hospital to Have New Home.

Construction is expected to start early this fall on the new home for the Clarence Barker Memorial Hospital, at Biltmore, N. C. The first group of buildings will cost $350,000. It has been decided to have one wing of this hospital as an orthopedic hospital.

Dr. Percy G. Hamlin,

Recently of the staff of the Eastern State Hospital, Williamsburg, Va., is doing post-graduate work in the North.

Dr. E. C. S. Taliaferro,

Norfolk, Va., has returned home after a visit with his family to Blue Ridge Summit, Pa., and Gloucester County, Va.

Dr. R. Rush Goad,

Recently of Hillsville, Va., announces his removal to Dublin, Va.

Drs. Wm. N. & Geo. W. Botts

Have formed a partnership and located in Appalachia, Va. Both of these doctors have just taken extensive work in New Orleans, Chicago and New York, in diseases of the eye, ear, nose and throat, and will limit their practice to these specialties.

Dr. Charles E. Dyer,

Who has been practising in Pulaski, Va., since his return from the war, has accepted the position as physician with the Jewell Ridge Coal Company, Jewell Ridge, Va.

Dr. G. G. Painter,

Pulaski, Va., returned home early in August,

much improved in health, after a six weeks' stay at Jefferson Hospital, Roanoke.

Dr. R. W. Selby

Announces his removal from Raccoon Ford, Va., to Middleburg, Va., where he is associated with Dr. H. A. Spitler. Dr. Selby announces that there is a good field at Raccoon Ford for a general practitioner.

Dr. E. E. Walker,

Who has been located at Evergreen, Va., has moved to Phenix, Va.

Dr. James W. Tipton,

Who has been doing general practice in Dublin, Va., is now taking a special course in New York in diseases of the eye, ear, nose and throat, in which he expects later to specialize.

Current Researches in Anesthesia and Analgesia,

In August, replaced the former Bulletin of the National Anesthesia Research Society, and will hereafter be published as a regular journal at $3 a year. The plan is eventually to cover and exhaust the international field in this branch.

Physicians in Congress.

The National Health Council bulletin announces that of the 531 members of both houses of Congress, only 8 are medical graduates. The great majority of the legislators are lawyers and two of the eight physicians are likewise members of the bar. The medical men in the Senate are Drs. Lewis H. Ball, of Delaware, Joseph I. France, of Maryland; in the House of Representatives they are Drs. John Jos. Kindred, of New York, Caleb R. Layton, of Delaware, Ladislas Lazaro, of Louisiana, Archibald E. Olpp, of New Jersey, John Wm. Summers, of Washington, and Lester D. Volk, of New York. Six of these are Republicans and two Democrats.

Dr. W. W. Insley

Has returned to his home in Christiansburg, Va., after spending several weeks attending clinics in Chicago.

Dr. Virgil B. Hirst,

Of St. Luke's Hospital, New York City, recently visited his former home at Purcellville, Va. Dr. Hirst was a member of the class of '18, University of Virginia, Medical School.

Dr. and Mrs. A. R. Shands,

Washington, D. C., after a visit in Appomattox County, Va., have gone to Portland, Ore., to attend the Episcopal Council.

Dr. and Mrs. C. S. Dodd,

Of Petersburg, Va., have returned home after a motor trip to Harrisonburg, Va.

Dr. George W. Parrott,

Charlottesville, Va., has been elected vice-president of a committee recently formed to arrange for the establishment of a band in that city.

Dr. W. J. Strother,

Culpeper, Va., has resigned as a member of the Board of Visitors of the Medical College of Virginia, and Col. Julien Hill, president of the State and City Bank and Trust Company, of Richmond, has been appointed as his successor, the term of office being for life.

Dr. R. D. Tucker,

Powhatan C. H., Va., has been elected a member of the board of directors of the Bank of Powhatan, Va.

Dr. Roy K. Flannagan,

Of the State Board of Health, returned to his home in Richmond about the middle of August, having sprained his ankle, while on a visit to the Boy Scout camp near Danville, Va.

Additional Appropriation for Leprosarium.

A bill has passed the Senate and gone to the House, calling for an appropriation of $650,000 to erect additional buildings for the National Leper Home at Carville, La. It was brought out in the discussion that the leprosarium is crowded and its facilities are so limited that it is unable to take care of additional patients, although there are 100 applicants. The U. S. Public Health Service has charge of the Lepers' Home and plans eventually to care for every leper in the United States.

Dr. N. P. Oglesby,

Who succeeded Dr. Robt. T. Glassell, of Bowling Green, Va., as physician for the

Jewell Ridge Coal Corporation, has now located at Dublin, Va.

Dr. J. M. Talbee,

Physician for the Consolidation Coal Company at Seaboard and Coaldan, Va., recently took a six weeks' vocational course at Johns Hopkins University, Baltimore. During his absence, his practice was looked after by Dr. C. E. Dyer, who has now moved to Jewell Ridge, Va.

Dr. Sheffey Goes as Missionary on the Congo.

Dr. Charles P. M. Sheffey, of Lynchburg, Va., sailed from New York, about the middle of August, to begin a medical missionary career on the Congo in Africa. He is a graduate of Randolph Macon College, a medical graduate of Johns Hopkins University, and served sometime as an interne in a Norfolk, Va., hospital.

Dr. Marshall W. Sinclair,

Until recently of Newport News, Va., after a post-graduate course in surgical pathology at Johns Hopkins Hospital, Baltimore, has moved to Anderson, S. C., where he has been appointed pathologist in Anderson County Hospital.

Dr. R. C. Carnal,

Recently of Piedmont Sanatorium, Burkeville, Va., is now associated with Monroe County Tuberculosis Sanatorium, Rochester, N. Y.

Government to Investigate Cause of Cancer.

The government is to begin an investigation into the cause of cancer. Asst. Surgeon General J. W. Schereschewsky, of the Public Health Service, has been detailed to make investigations and will establish headquarters in Boston, where he will have the cooperation of leading medical men in the work.

Are You Going to Norfolk?

All interested in the meeting of the Medical Society of Virginia in Norfolk, October 31—November 3, hope your answer will be in the affirmative. Why not? You need a rest mentally and physically, and you will get both there. Make your reservations promptly. There will be plenty of room, but you will get better accommodations by applying early.

The invitation in this issue, sent by the secretary of the Norfolk County Society, will give an idea of the good time in store for you. In addition, our president, Dr. Taliaferro, has invited guests whom you will wish to hear.

Cards were sent out about the last of August, requesting titles of papers. If you have not sent yours, kindly attend to this at once. Do your part toward making this the biggest and best meeting of the Society.

The Medical Association of the Valley of Virginia

Will hold its regular meeting in Clifton Forge, September 28th, at 11 a.m. An interesting program is planned and, as this is the annual meeting, the election of officers will be held. The secretary of the State Society will attend and present some matters of importance. Dr. Chas. E. Conrad, Harrisonburg, is president, and Dr. Alex. F. Robertson, Jr., Staunton, secretary.

Good Health Week.

An organized movement for the promotion of better health will be inaugurated in "Good Health Week," which is to be observed throughout the country October 23-30. The Executive Committee of Good Health Week Promotion Bureau states that there are certain problems in the public health field which should be left entirely to the medical profession; others require engineering and manufacturing knowledge to develop; and still others have to do with the education of the layman as to the benefit to be derived from attention to health matters. Three of these which will receive special attention during "Good Health Week" are ventilation, sanitation and personal hygiene. The secretary-treasurer of this organization, Wm. F. Hatch, Room 704, 209 Grand Avenue, Milwaukee, Wis., will furnish any information desired.

Dr. E. J. Nixon,

Petersburg, Va., was chosen one the Brigade Commanders of the Sons of Confederate Veterans of Virginia at its annual reunion in Winchester, the latter part of August.

Other physicians noted as delegates at this meeting were Drs. R. B. Davis, Holdcroft, W. C. Powell, Petersburg, and J. N. Barney, Fredericksburg.

Members Executive Committee, American Legion, Va. Department.

Drs. C. N. Rucker, Clifton Forge, W. B.

Peters, Appalachia, and Chas. E. Dyer, Jewell Ridge, were elected members of the Executive Committee of the American Legion, Virginia Department, at its annual meeting in Charlottesville, August 24-26.

Dr. and Mrs. J. Allison Hodges,

Of Richmond, Va., have returned home after several weeks spent at their summer home at Montreat, N. C.

To Add New Unit to University of Virginia Hospital.

Plans are nearly completed for a new unit to the University of Virginia Hospital. This will be located south of the present buildings and will conform in structure to the wing on the north. It is to house the obstetrical and orthopedic departments. Its construction is made possible by the $50,000 gift of Paul McIntire. It is hoped that plans for the construction of this wing will be let in time to have it completed by next April.

Dr. A. J. Nelson,

Seattle, Wash., is now on a visit to this State. While east, he will visit a married daughter in North Carolina. Dr. Nelson is a native of Virginia but has made his home in Seattle for some years. He has been the recipient of many honors by the profession in the State of his adoption.

Dr. George M. Magruder,

Senior surgeon of the U. S. Public Health Service, and since 1919 in charge of the Norfolk Public Health office, has been ordered to Detroit as surgeon in charge of the office there. Dr. Magruder is a native Virginian and is an alumnus of the Medical School of the University of Virginia.

Dr. George B. Young, a senior surgeon in the service, recently at the Marine Hospital, at Stapleton, L. I., but formerly stationed at Norfolk, will succeed Dr. Magruder.

Honor Memory of Old-Time Doctor.

Friends of the late Dr. Godfrey L. Miller, of Winchester, Va., have raised $2,000 with which to erect a memorial to his memory. The memorial is to take the form of a fountain to be erected near Frederick County court house. It is to be built of Barre granite, will be nine feet high, and will contain two drinking fountains. Dr. Miller was a family doctor of the old school and was in charge of all Confederate hospitals in Winchester during the War Between the States. He died in December, 1920, at the age of 85 years.

Dr. S. C. Draper,

After practising medicine at Pulaski, Va., for a number of years, left early this month to locate at Aberdeen, Md.

Dr. L. E. Walton,

Recently of Marlington, W. Va., announces his removal to Pullman, W. Va.

Dr. W. W. McChesney,

Monarat, Va., accompanied by a friend, took a motor trip to New York, early in September. On the way, they stopped for a visit to relatives at Cartersville, Va.

Dr. Thos. G. Hardy,

Farmville, Va., attended the State Convention of the American Legion, in Charlottesville, the latter part of August.

Dr. J. N. Barney,

Fredericksburg, Va., was re-elected city health officer of that place by the New City Council.

Drs. John Blair Fitts and Thomas Wheeldon

Announce the opening of their new offices and gymnasium for the practice of orthopedic surgery at 15 East Franklin Street, Richmond.

Dr. and Mrs. William C. Powell,

Petersburg, Va., are home again after a ten days' visit to Blue Ridge, N. C.

Dr. and Mrs. J. C. Coulter,

Daughter, and some friends, of Charlottesville, Va., have just returned home after an automobile trip of over 1,200 miles through Maryland and Pennsylvania. While in Pennsylvania, Dr. Coulter visited his parents, who live a short distance north of Pittsburgh.

Dr. W. F. Draper,

Recently in charge of rural sanitation work in Virginia, is among five physicians who have just been designated assistant surgeons-general of the U. S. Public Health Service.

Dr. Murat Willis,

Of this city, has been elected professor of surgery for the Medical College of Virginia, to succeed Dr. Stuart McGuire, resigned. Dr. Willis, who has been professor of clinical sur-

gery, will enter upon his new duties at the beginning of the present session.

Dr. William S. Keister

Has been elected health officer of Charlottesville, Va., to suceed the late Dr. R. Lindsay Robertson. The present term of office will expire March next.

The New Altamont Hospital, Inc.,

Christiansburg, Va., which was formally opened on the 12th of April of this year, is a twenty-five bed, modernly equipped institution for general hospital work. This hospital is an outgrowth of the Altamont Hospital formerly operated at Cambria, Va., from 1912 to 1922, and is equipped with the latest and most modern facilities for taking care of surgical and medical cases. It is located in the west end of Christiansburg on two of the main highways leading out of town, and is situated on a four-acre tract of land, with plenty of shade and quiet surroundings to make the convalescence of patients as pleasant and agreeable as possible.

In connection with the hospital there is a well equipped laboratory for doing the usual laboratory work for a hospital of this type, and also an X-ray department for diagnostic work. The nursing department is in charge of a competent corps of nurses, and a training school for nurses is under comtemplation for the near future.

The hospital is in charge of a staff of local physicians, and every care and attention is given to the proper care and handling of patients.

The American Child Hygiene Association

Will hold its thirteenth annual meeting in Washington, D. C., October 12, 13 and 14, with headquarters at the New Willard Hotel. Full information about the meeting may be obtained from the Association headquarters, 17th and F. Streets, Washington.

The U. S. Civil Service Commission,

Washington, D. C., announces open competitive examinations for trained nurse and trained nurse (psychiatric) on October 18, 1922. Vacancies in the Panama Canal Service will be filled from this examination. Application blanks and further information may be obtained from U. S. Civil Service Commission.

The Service also announces an open competitive examination on October 10, for research assistant in child hygiene, to fill vacancies in the Children's Bureau, Department of Labor, and in positions requiring similar qualifications.

Provisional Birth and Mortality Figures.

Figures compiled by the Bureau of the Census indicate lower birth and higher death rates for the first quarter of 1922 than for the corresponding quarter of 1921. For the states compared, the highest birth rate for the first quarter of 1922 was shown for North Carolina, and the lowest rate for the State of Washington. The highest death rate for states compared was shown for the District of Columbia, and the lowest for Wyoming.

The Women's Foundation for Health, Inc.,

Has established headquarters at 43 East 22nd Street, New York City. The objectives of the foundation are: "To establish the conviction that health is generally attainable through individual effort and responsibility," and "to establish the conviction that mental health is as procurable as physical health." A number of representative women's organizations throughout the country are now cooperating in this work. They state that their plan is to have the physician and the lay member of the community co-operate in the furtherance of their efforts for better health.

The American Academy of Ophthalmology and Oto-Laryngology

Will hold its twenty-seventh annual meeting in the Twin Cities of St. Paul and Minneapolis, September 19-23, under the presidency of Dr. Walter R. Parker, of Detroit.

New Chair at Medical College of Virginia.

The Board of Visitors of the Medical College of Virginia by unanimous vote, have adopted a resolution to add a course in military tactics and science, with a United States officer in charge. Major Charles W. Sale, of the class of '07, of the former University College of Medicine, of this city, was elected to the professorship of this chair, and assumed his duties with the beginning of the present session.

Senate Passes Tariff Bill.

The Senate passed the tariff bill on August

19th, and it was sent to conference as the Senate made numerous changes. It is expected that a conference report will be adopted about September 15th. The Senate made notable changes in this bill regarding synthetic medicinals and chemicals, about which much controversy has existed. While efforts to continue the embargo provisions of the present Emergency Law did not succeed, prohibitive duties were incorporated, which are regarded as equivalent to an embargo. It was asserted that the manufacture of synthetic drugs and medicinals from coal tar products in the United States during the war could not be continued against German competition, unless amply protected by tariff duty. Special taxes are to be placed on these products.

Wanted.

Young physician qualified to practice medicine in Virginia who would be interested in an industrial position. Can get in touch with good proposition by addressing "Industrial," care Virginia Medical Monthly. (Adv.)

Wanted.

A doctor for large rural practice. A good living from the start and, when reorganized, should run to $4,000 or better a year. Address "The Taylor-Gay Company, Raccoon Ford, Va." (Adv.)

Location Wanted.

An unopposed practice where doctor is needed. Address "A," care this journal. (Adv.)

Obituary

Dr. William F. Driver,

A prominent and beloved physician of the Valley of Virginia, after suffering several years from diabetes, died at his home in New Market, Va., May 22, the immediate cause of death being an attack of pneumonia. Dr. Driver was born near Timberville, Va., July 3, .1877. He graduated in pharmacy at the former University College of Medicine, Richmond, and later in 1905, in medicine. He received many honors while at college having been president of the senior pharmacy class, second year medical class, and later president of the student body. During several school vacations, he served as pharmacist in Norfolk, Va. After graduating in medicine and serving a term as interne at Central State Hospital, Petersburg, he located in New Market, and was prominently identified with the professional and civic life of that community.

Dr. Driver was a member of his local and State medical societies. He was for a number of years secretary of the Shenandoah County Medical Society and later president of the Shenandoah Valley Medical Society. He was also a member of the Membership Committee of the Medical Society of Virginia.

He is survived by his wife, three daughters and a large family connection.

Dr. Willis Wilson Silvester, Jr.,

A prominent internist of Norfolk, Va., died at a Richmond hospital, September 4, after a short illness. He was thirty-three years of age and had graduated in medicine from the University of Pennsylvania, School of Medicine, in 1913. He was a member of the Norfolk County Medical Society and of the Medical Society of Virginia. His wife and one child survive him.

Locksley P. Hening,

A member of the senior class of the Medical College of Virginia, was fatally injured by lightning on August 8 and died on August 14. He was convalescing from injuries received in a saw mill accident several weeks prior to this and it is stated that death was due to hemorrhages from the reopening of old wounds. Mr. Hening was 24 years of age and a son of Dr. Thomas S. Hening, of Jefferson, Va.

Dr. Stephen Smith,

A noted physician and the founder of the American Public Health Association, died August 26 at Montour Falls, near Elmira, N. Y. He was 99 years of age. At the last meeting of the American Public Health Association, he was tendered a banquet in recognition of his work in public health.

Dr. Alexander Righter Craig.

As we go to press, we learn with regret of the death of Dr. Craig, who has been secretary of the American Medical Association, for a number of years, and was one of the best known men in the profession in this country. His death occurred on the night of Steptember 2nd, at Port Deposit, Maryland.